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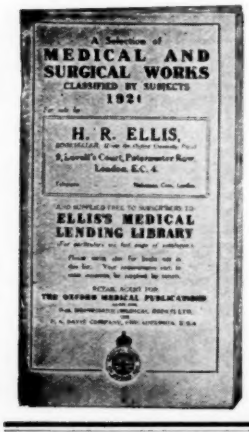

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APHASIA is a subject the study of which, difficult enough in itself, seems fated to be rendered more confusing and complex by controversy and by terminological disagreement. One of the factors in this intricacy is the possibility of approaching the problem from anatomical, physiological, and psychological sides alike, and investigators have not always been careful to avoid inappropriate transference of terms or even of conceptions from one system to another. For example, the term "centre" occurs with some constancy in descriptive accounts of aphasia, but its meaning has been so variable as often to lead to erroneous impressions. An anatomical "centre," an anatomical projection-area, may be exactly delimited, as in the case of the visual area in the calcarine cortex, the Betz-cell motor area of the precentral cortex, and so on. A physiological "centre,' on the other hand, indicates the focus of functional activity of the particular system concerned, and is not of necessity identical in site with its anatomical correlate; a "process" is not to be localised morphologically. Thus, for example, the physiological "centre" for motor cortical activity can scarcely correspond precisely to the Betz-cell anatomical system. Thirdly, however, cerebral function has a psychological aspect, and only too often has the writer on aphasia speculatively postulated psychical or ideational "centres" (e.g., Grasset's "centre O") which cannot possibly correspond to anything on the anatomical or physiological levels, but for which the same term is used. It will therefore be seen how unsatisfactory are the various schemata devised by the ingenious to simplify and organise the complexity of the cerebral speech mechanism. The plotting out of physiological centres on paper almost inevitably leads to the conviction in the student's mind that they stand for anatomical areas of the cortex, which is far from being the case, while the drawing of lines of communication between these physiological centres and a psychical or ideational "centre" makes confusion worse confounded.

Graphic anomalies apart, however, it is unwise in my opinion to divorce the psychical or psychological component from its anatomo-physiological counterpart. Speech is an intellectual process and behind the overt expression lies thought, but neglect of the anatomical and physiological basis of speech is largely responsible for the present confusion, for the psychologist is not interested in, or is tempted to ignore, the patiently acquired facts of cerebral localisation of function, and confines his attention to speech disorders as disorders of the psyche, the "localisation" of which is supposedly irrational. Yet when a small area of softening in the left hemisphere renders a patient mute, when another makes it impossible for him to read, the clinician must either forego all effort to correlate the two, or in spite of theories of psychical process must admit that local lesions of the brain may be associated with partial disorders of an intellectual mechanism. In this connexion not enough notice, I fear, has been taken of the work of Shaw Bolton in this country and of the Swiss school (von Monakow, Berze, Fankhauser) according to which there is evidence that certain layers of the cortex, considered in their whole extent, constitute the anatomo-physiological basis for certain forms of psychical activity, and, however long the step be towards proof, it is a step in the right direction.

A given aphasic symptom-complex may be looked at in three ways: What is the anatomical site of the lesion producing the defect? What are the physiological mechanisms involved? What is the nature of the psychological disorder? No study of the subject can make any pretence at completeness if any of these three aspects is ignored, nor, on the other hand, can it be harmonised with clinical data if anyone is elaborated at the expense of the others.

ANATOMICAL.

It seems superfluous to point out that by universal consent we are justified in stating that in right-handed persons the lesions apt to be associated clinically with disorders of the function of speech are situated in the left cerebral hemisphere, and in a certain part or parts of that hemisphere. According to Henschen some 1500 autopsies on cases of aphasia have now been made, and the cumulative effect of this weight of evidence, pointing as it does to the existence of a cortical speech area, cannot possibly be ignored. Exceptions but prove the rule. A glance at the charts published by Niessl von Mayendorf will suffice to show that lesions within a more or less well-defined cortical region, extending from the posterior part of the lower frontal lobe across by the island of Reil to the upper temporal and lower parietal areas, are likely to reveal themselves clinically by aphasia in one or other form. In the so-called negative cases mere macroscopical examination is insufficient. The histological study of the cortex has reached so fine a pitch that no case can be called "negative" if this has not been undertaken.

Whether localisation of lesions within this speech area, to correspond to clinical varieties, can be established is to some extent doubtful. The time-honoured division of aphasia into motor and sensory types—a physiological classification—recognises the existence of two differing groups whatever be the terminology adopted, and it is legitimate, physiologically, to distinguish efferent from afferent impairment of function. Whether it is useful may be another matter. As far as speech is concerned the doubt is whether one type of symptom ever occurs without the other, though it be in varying proportions. According to this "global" theory large lesions in the speech area are followed by gross aphasic disorders and small or limited lesions by limited aphasic disorder; in each case an aphasic disorder as a whole. The so-called pure cases of the condition—i.e., of one or other clinical variety to the exclusion of the symptoms of another—are in reality doubtful and their apparent occurrence is due, perhaps, to an unconscious trend towards schematisation; the more thoroughgoing the clinical examination the less likely are such cases to be recorded. It is a fact, none the less, to which attention must be directed, that in a given case disorder of speech may be largely limited to the receptive or to the expressive side, or indeed to but one aspect of reception or expression. There is justification, moreover, in seeking limited lesions for small aphasic disturbances, though no correspondence between anatomical size of lesion and physiological amount of impaired process is to be expected, in any regular way. The clinical symptom of astereognosis, or inability to recognise the qualities of an object by touch and so to name it, is the result, in cerebral cases, of limited lesions of the superior parietal lobule, a fact often demonstrated by operation or post mortem; and there is no good reason why inability to recognise objects by sight, or any other analogous defect on a similar plane, should not be equally the outcome of a lesion localisable with the same relative closeness.

The task of assigning disorder of function to site of anatomical defect is none the less peculiarly arduous. A tendency to correlate symptoms with naked-eye lesions and to ignore the necessity for the exact determination of their extent by the microscope is to be deprecated; further, the effect "at a distance"

in linked neuronic systems of a given anatomical lesion must not be overlooked.

When, as remarked above, it is stated that the overwhelming bulk of evidence points to a general speech area in the left hemisphere, lesions in which are revealed clinically by varieties of aphasia, I do not ignore the exceptional cases, of which not a few have been put on record. Several valid explanations have been advanced in such cases; perhaps the most significant is the possibility of left-handedness occurring, if not in the individual concerned, then in other members of his family. There is something to be said for the "stock-brainedness" theory of Foster Kennedy. Crossed aphasia, so-called, may be due to individual peculiarities, for physiological as well as anatomical anomalies may occur. And, once again, there is the question whether in a particular case a microscopical examination of the cerebrum has been made.

PHYSIOLOGICAL.

To understand the physiological mechanisms employed in speaking we may clear the ground by a brief sketch of how speech is acquired. Long ere the child has begun to articulate, his ears have become accustomed to many and varied sounds, included in which are the sounds of words, mere noises to the child, without any meaning. Some of these sounds are repeated in his hearing much oftener than others, so that he gradually learns to distinguish them and to associate them with certain objects, animate or inanimate. We have no reason to doubt that, before articulate speech begins, the infant is using both hemispheres for vision and both for audition. The next step is the endeavour to imitate by articulation the sounds he hears constantly repeated by others, and in this way the movements necessary for the articulation of these sounds, or words, are learned. Again we must believe that both hemispheres are being utilised for speaking movements; before he learns to read or write, therefore, his "inner language" consists of the memories of certain sounds closely linked to the memories of certain movements, and the former of these is also intimately bound to the visual ideas of certain objects. When his nurse says "bow-wow" he will look for or point to his little toy dog, and when it is shown him he will say "bow-wow." Thus as early as he begins to think at all, he is developing his "inner language."

When the child reaches the stage of learning to read and write, his inner language becomes considerably more complex. He learns to write by letters and by syllables, which are the signs for sounds, be it noted, since our writing is phonetic. In this way he acquires a visual picture for each sound, made up of a letter or combination of letters, and so he reaches the stage of a visual knowledge of letters, syllables, and words. He learns to write, however, with one hand, and that the right hand. Hitherto, as we have seen, the presumption has been that both hemispheres have been utilised for hearing sounds, for articulating sounds, and for reading signs that stand for sounds. When he writes signs that stand for sounds, we must suppose he uses largely, if not entirely, a part of his left hemisphere only, as far as the physiological mechanism is concerned. Now if both hemispheres have thus shared in the acquisition of speech, how comes it that in the average individual it is only necessary to destroy a limited portion of the left cerebral cortex for a complete aphasia to result? The received explanation is the general right-handedness of the genus homo, but the inadequacy of this solution can be seen when it is realised that the difference between the daily work of the two arms is vastly less than the corresponding difference in function between the right and the left speech areas. According to Ernst Weber the final determination of the lead of the left hemisphere, from the viewpoint of speech, is that the child is taught to write with the right hand, and for this theory there is no little evidence. A physiological concentration of this sort, leading finally to preponderance of the left hemisphere in speech mechanisms, could not have occurred until writing with the right hand had become general among all classes. Arguing by analogy, one would suppose the musical functions to be more bilaterally and equally represented and certain researches (Mingazzini, Probst) go to substantiate the contention.

Still speaking physiologically, we are to bear in mind that a spoken word and a written word are movements, while on the sensory side a seen word is no more than a seen object, and a heard word than a heard noise. Before the child can write a single letter correctly he will scribble with his pencil and say it is "writing," and if to us it is an unintelligible scrawl it is identical physiologically with an intelligible scrawl. The infant's laryngeal noises may be unintelligible but they do not differ integrally from the laryngeal noises that we call words. All must, accordingly, come under the ordinary physiological rules for motion and sensation; and physiological disorders affecting both projection-systems, be they afferent or efferent, and physiological cortical centres for motion and sensation, may impair the reception or the execution of speech elements as of any other function elements.

Though it be a platitude that speech itself is something far beyond mere function of projection-systems, this sketch of the elements has been given because of the importance of recognising that on the physiological side the mechanisms relating to speech are in every way similar to those connected with the function of the non-speech parts of the brain. Impinging on motor and sensory projection-systems connected with the execution or reception of speech components is a complicated series of association-systems; they are "private paths" converging on a "final common" path, and lead directly or indirectly from cortical reception-fields to those concerned with motor innervation. Disorder of these transcortical association-systems underlies the clinical phenomena of aphasia as ordinarily understood. Stress is laid on the fact that, anatomically, association-paths between cortical projection-fields must start from, and run into, these fields; hence ordinary lesions of the latter must inevitably involve origins or terminations of such inter-central paths. For this and other reasons complete "isolation" of the physiological systems concerned must be practically an impossibility, though, on the other hand, there is no reason to doubt that limited functional disturbance of association-paths occurs, and that a relative separation of the speech area from non-speech areas is a possibility. It is important to bear in mind, further, that the same motor cells of the cortex, say those innervating mouth, lips, tongue, palate, are used at one time in the function of speech, at others in totally different physiological combinations, and, since the function of motor speech may be grossly disturbed while the cells can be utilised for other functions, we cannot suppose the physiological defect to be localised in the cell-groups concerned. It must be outside them. Theoretically, therefore, apart from clinical and pathological considerations, disorders of speech must be disorders, physiologically, of higher mechanisms which play on those of a lower physiological level.

PSYCHOLOGICAL.

The subject increases enormously in complexity and intricacy when we turn to read, heard, written or spoken words, not as sounds, movements, &c., but as symbols or expressions of ideas. Speech is symbolic thinking, as Head has again recently emphasised; to adopt an illustration of Lloyd Morgan's, used originally in another connexion, the anatomo-physiological basis of speech is as different from symbolic thinking as is the movement of the needle on the gramophone record from the tune it can be made to play. Nor, indeed, is our illustration complete, for some hold that abstract thinking may proceed without utilisation of any of the "images" of speech. Letters and words are the signs for sounds, as already mentioned, but words are, in addition, symbols of another order altogether; they have a "content," a "meaning"; as Bastian said, they are the counters by means of

which thought is carried on. Speech, in fact, is an intellectual process and it has always, therefore, appeared to me idle to attempt to distinguish speech disorders from intellectual disorders; the controversy, in any case, is bound to prove somewhat barren. Osnato has stated that intelligence in its widest sense, speech, and eupraxia, are one and the same process, and that they develop together and disintegrate together; if this is too much of a generalisation, it is nevertheless impossible, and impracticable if it were possible, to say where speech defect ends and general intellectual defect begins. Psychologically, speech disorders are disorders of the Gesamtpsyche; local lesions of structure, limited disorders of physiological mechanism, and partial disturbances of psychical process, cannot conceivably be superimposed one on the other within identical boundaries or be made to correspond precisely; the units of the standards whereby they are measured are not of the same order.

But we shall make no advance in the study of aphasia as a cerebral symptom or a psychical disturbance if we do not take our stand on the clinical certainty that varieties of speech impairment occur, are recognisable, can be differentiated, and are of practical and localising significance. For the clinician the problems of aphasia have to be faced in exactly the same way as those of disorders of function of the non-speech parts of the brain.

CLINICAL FORMS OF APHASIA.

Much of the dissatisfaction expressed from time to time in reference to the classification of aphasic disorders is due to confusion of thought as to the basis of that classification. From what has already been said, it will be clear that aphasia can be classified in an anatomical, physiological, or psychological scheme, but we must avoid, as has been already remarked, any transference of the terms used in the description of defects of one of these systems to the defects of either of the others. Aphasia being, in essence, a symptom or symptom-complex, we might ascertain the general site of the lesions calculated to produce it, and endeavour to correlate clinical varieties with variation in the position of the latter. We might, conceivably, speak of frontal, parietal, temporal aphasia, &c., though such a scheme would be difficult to particularise. "Island aphasia" (Inselaphasie) is a term which has never come into vogue in this country, but it represents a form of aphasic defect which appears to be the expression of local lesions involving the island of Reil and in this sense is an anatomically descriptive term. Again, aphasic disorders are commonly classed as motor, sensory, or mixed; "transcortical motor" and "transcortical sensory" are further varieties capable of clinical differentiation; "conduction aphasia" (Leitungsaphasie), too, can be recognised. These are physiological distinctions, and though much is indefinite, and still more speculative, the physiological classification of aphasic disorder is in the first place thoroughly legitimate, and in the second place has proved of practical clinical value from the viewpoint of cerebral localisation.

A third classification takes into consideration solely the psychological side and analyses speech disorders as disorders of the Gesamtpsyche, anatomo-physiological correlates not entering into the scheme. The most recent and noteworthy endeavour to classify aphasia psychologically is that made by Dr. Henry Head, for the details of which the student may be referred to his recent papers on the subject. It may be questioned whether in the present state of knowledge a pure psychological grouping must not remain more of scientific than of clinical interest, but for that matter no one of the three schemes is by itself satisfactory. There are certain important psychological characteristics of aphasic disorder in a general sense, largely common to all varieties; on the other hand, there is a definite association between certain clinical varieties and the interruption of certain mechanisms of a physiological order. It appears to me that until further advance is made a psychological arrangement has the disadvantage of losing touch with cerebral function, while an anatomo-physiological arrangement is calculated to introduce an artificial simplicity into a particularly complex subject and to ignore what must always be its fundamentally significant side. Without prosecuting further this matter of classification I wish to direct attention to some points, consideration of which is an essential prelude to the study of the disorders of speech.

Intellectual and Emotional Speech.

To the acute intellect of Hughlings Jackson we owe appreciation of the difference between the "interjectional" and the "propositionising" use of words as symbols of thought. The former is an element in emotional and the latter in intellectual speech and one may be grossly affected without proportionate impairment of the other. In ordinary aphasia there is commonly relative conservation of emotional speech; it is not infrequently noted that a patient with a limited vocabulary, the result of disease, will nevertheless contrive to convey the most varied meaning to his words by alteration of inflection, tone, accent, stress, and emphasis, and this can be done even when he has but one word to say, but one string to play on. Often, too, abundance of gesture makes up what is wanting in intellectual speech. The aphasic may say "Yes" when he means "No" and may have to depend on emotional speech, or on one or other of the above makeshifts, to express his real meaning. Or, again, he can often ejaculate words emotionally which he cannot use at all in the form of a proposition—i.e., in correct, logical speech. One of my patients who suffered from motor aphasia in the ordinary sense saw a Zeppelin descend in flames one night on the outskirts of London and ejaculated "Hallelujah!" under the stress of his emotion, which word he has never since been able to repeat "propositionally." An aphasic patient may swear with fluency when no amount of urging will get the same words out in the form of a "proposition." In one case of paraphasia from a temporoparietal lesion the patient was so irritated by his frequent mistakes—at breakfast he said "pass the ink" instead of "pass the salt"—that an only too correct "damn!" escaped his lips, whereupon his wife rated him soundly for swearing before the children.

Loss of emotional speech, intellectual being preserved, has not been the subject of much investigation, interesting though it is. Years ago Brissaud spoke of patients who had lost "le chanson du langage," and who were incapable of adding emotional meaning to their words by the light and shade of accent and emphasis. Their speech was one long monotone. Elsewhere I have recorded a case of this description, but it is not clear whether such disorder may not accompany lesions at a lower physiological level than that of ordinary aphasia.

Agrammatism.

Not enough attention has been paid, perhaps, to the grammatical and syntactical aspect of the subject, which is of fundamental importance. As words are made up of letters and syllables, so sentences are made up of words, and they are intellectually meaningless unless they are properly constructed. The path from thought to intelligent expression lies through the sentence; hence in aphasia difficulties with the sentence are prone to occur, and the aphasic often reverts by a process of involution to the standard of the child learner, who has trouble with those parts of speech that are concerned with qualifying and correlating. In the words of Mills, the grammar of language no longer exists for the aphasic. Agrammatism as defined by Arnold Pick is "that form of pathologically altered speech in which the essential elements for the grammatical and syntactical structure of speech are either lost or imperfectly employed." Many clinical examples might readily be furnished. Arising out of the same basic impairment is the tendency of many subjects of aphasia to speak or to write in the "telegram style," omitting parts of

speech which may not be strictly necessary for comprehension but are, nevertheless, essential for correct speaking. It is more particularly prepositions and articles which are omitted and nothing really shows the poverty of the patient's language so much as their omission. The following letter was received from an aphasic in answer to a request for a report on his condition:—

Dear Sir,—Speech, difficulty of speaking. Arm, leg, no improvement. Pain thumb, no grip. Loss of memory, serious. Brain fag recovering, although slowly.—Yours truly.

As the child at school is taught to spell by letters and by syllables, so acquiring his knowledge of the morphology of words, in a similar but reversed way the disintegration in the morphology of speech caused by a cerebral lesion may result in the aphasic's having great difficulty with letters and syllables, not as regards their enunciation but as regards their correct employment. He may lose his power of spelling, but apart from that he may persistently use wrong letters or syllables and often a long trial-and-error process is necessary to get the correct result. Thus one patient said "shapple," "shaplin," "shapnel" in succession before he got "shrapnel"; another said "tuning-thorn," "tuning-thork," en route to "tuning-fork"; and so on. Once more, the aphasic often begins sentences which he never finishes; sometimes he has two or three words correctly put together but ending "in the air." I asked one of my patients how he was, and the answer came: "Well, I can't . . . . I never . . . . I'm a little . . . It's really. . . ."

This defect is to be distinguished from what has been improperly called the "pseudo-agrammatism" of inability to recall the names of objects. In this case the patient will speak quite correctly but is forced to employ one periphrasis after another owing to his lack of substantives; and, on occasion, the emotional comes to the aid of the intellectual, as with a patient suffering from this amnesic difficulty who was shown a photograph of his son and asked what it was. He answered in a crescendo fashion: "my . . . . it's the . . . . it's my . . . . oh! . . . . he's my . . . . oh dear! . . . . he's my boy!"

This difficulty in naming objects, in finding substantives, has long been known and its definiteness led Mills, on clinico-pathological grounds, to postulate a "naming centre" in the temporal lobe; more recently, Head has coined the term "nominal aphasia" for a type which includes this particular defect. Undoubtedly disorders of the nature of agrammatism run like a thread through most of the clinical types, and yet we must take care to limit the conception. Pick emphasises the fact that higher grades of paraphasia and of jargon-aphasia, for example, ought not to be classed with agrammatism, since in them the impairment lies at another level; he furnishes evidence, nevertheless, that agrammatism and a degree of paraphasia are apt to occur in combination, and that their basis is disturbance of a physiological mechanism localised mainly in the temporal lobe. The subject needs further investigation. Recent work by Förster points to a frontal localisation for the mechanisms underlying the grammatical structure of speech; Maas, on the other hand, considers agrammatism the result of the imperfectly equipped right hemisphere essaying the function of speech when the speech areas of the left are destroyed by large lesions.

Some Considerations on the Clinical Varieties of Aphasia.

For that large class of case in which the patient is unable to understand what he sees or hears I prefer to substitute the term "receptive aphasia" for "sensory aphasia." As regards audition, it should be understood by the student that an aphasic may suffer either from word-sound-deafness or word-meaning-deafness, and that these two conditions are distinct. He may hear sounds and tones but not be aware that they are word-sounds; or he may know them to be word-sounds but have no idea of their meaning. A foreigner ignorant of English is word-meaning-deaf to the English tongue when he hears it spoken, but not word-sound-deaf. Similarly, as regards vision, the patient may be word-sight-blind, or word-meaning-blind. In the former case he sees written or printed letters, syllables, and words as mere objects, and is unaware that they are speech-symbols; in the latter he is conscious of their being symbols for ideas, but these symbolic meanings are not aroused by the sight of the words.

The subjects of receptive aphasia have usually considerable capacity for expression, but their words are often incorrect and their agrammatism is sometimes peculiarly pronounced.

A brief excerpt from the notes of a case of this description may here be given. Unable to read a word and incapable of appreciating any but the very simplest requests, the patient was asked "How are you this morning?" and in answer rambled on as follows: "Well, just the same . . . . I know all my six little boys . . . . right away . . . . I know them all myself like . . . . I do I know if I could get away like . . . . There's six of them plenty of them . . . . There's the thing and I can't . . . . I am myself then plenty . . . . I know myself then, poor little old dears . . . . There's three little old boys . . . . Six of this lot . . . . There's two of them like . . . . There's two little old boys . . . . I know it myself if I could have got it . . . . Little old boy . . . . Anna, Anna, Anna . . . . Three to-day, Anna . . . . Poor little old dears . . . . " &c., &c. In contrast to this largely meaningless logorrhea the same patient was able to express his meaning by rich and accurate pantomime and gesture, and while he failed to give a name to any object he indicated its use quite correctly. As for letters and words he was unable to name a single one. When given a little hand mirror and asked to name it, what he said was "That's two for Jimmie . . . . Anna . . . . Anna's the boy . . . . " while what he did was to hold it up to his face and glance into it with a smile.

With so difficult a line of approach to the examination of cases of receptive aphasia, it is remarkable that one is sometimes able to get an unexpectedly good response if one can "tap" acquisitions which have become automatisms. This is true, indeed, of most cases of aphasia. Some sufferers from the condition can sing what they cannot "say"; a patient sang accurately the air and the words of a ditty which begins "Oh, I'm longing for my dear old home again" when he failed to say or use any of the words in other combinations in speech. Another was unable to say any of the numerals to order, or to use any of them in a sentence, but when shown the figure 1 in print he suddenly began to count and counted rapidly to over 20, when he was told to stop. Henschen has recently collected evidence, worthy of the attention of the student, which suggests that such acquired automatisms are located physiologically in the right hemisphere; the problem in many cases of aphasia is not one of destruction of engrams but of inability to arouse them.

Word-deafness in the sense of word-sound-deafness sometimes occurs almost in a pure state. The sounds of words are not distinguished by the patient from any other sounds, but his auditory engrams are utilisable for reading, writing, and speaking, though he cannot repeat words on request and cannot write to dictation. Before making the diagnosis one must be sure that his actual hearing is unimpaired. Subcortical lesions in the temporal part of the speech area have been shown to produce this variety of aphasia.

Word-deafness in the sense of word-meaning-deafness is a condition of remarkable interest. The patient hears words and knows that they are words, but these word-sounds, reaching his auditory centres, do not from thence awaken the meaning of the word, the concept for which it stands. Such patients often repeat correctly, parrot-like, what they hear, not knowing what it means; they write correctly to dictation, or copy, or read aloud, without knowing the meaning of what they read or write. To this variety the name "transcortical sensory aphasia" has been given, a term which for reasons stated above is unsatisfactory.

Yet it must be repeated that however objectionable the nomenclature the clinical occurrence of the type must be accepted. Because of the persistent echolalia the patient is often taken to be demented; the most striking example of this variety of receptive aphasia I have seen was in an inmate of an asylum. For further information reference may be made to the recent admirable monograph on the subject by Kurt Goldstein. In severe atrophic lesions of the temporal lobe the syndrome is prone to occur.

For the familiar "motor aphasia" of the text-books I prefer to substitute the term "expressive aphasia." The patient cannot express himself in words, and this without paralysis of articulatory mechanisms, for what words he has he articulates correctly enough. He will show by his actions and his response to stimuli that his intelligence is largely unimpaired and that his sole handicap is inability to express what is obviously in his mind, except by such makeshifts as have already been mentioned. It is no uncommon experience to find the subject of expressive aphasia indicating by varied stress and intonation of his single word or few words how much meaning he is trying to put into them.

It is impossible to say where expressive aphasia begins or ends and nothing is to be gained by hard-and-fast delimitations which are, indeed, contrary to what one has reason to expect. In my use of the term I simply wish to emphasise the clinical fact that in the general class of aphasic disorders is a type characterised, above all, by this defect in audible expression of words. Allied to the above is a further interesting clinical variety whose chief feature is that the patient is not able to say spontaneously what he can easily repeat to order; similarly he cannot write spontaneously, or only very poorly indeed, whereas he copies and writes to dictation with fluency. Such cases bear a close resemblance to those cases of apraxia in which the patient is unable to perform spontaneously what he is able to do by imitating movements made in front of him. It would appear that what cannot well be said voluntarily, can be said on receipt of adequate stimuli from certain sense avenues. To this variety the name "transcortical motor aphasia" has been given, but we have seen that all aphasia is, physiologically, transcortical, so that the term is confusing and should be abandoned. Expressive aphasia in the sense of word-dumbness is undoubtedly apt to occur with lesions situated in the more anterior part of the general speech area of the left hemisphere, or with others that interrupt association paths from temporal and parietal areas converging on this anterior region.

RELATION OF APHASIA TO AGNOSIA AND APRAXIA.

Word-deafness and word-blindness are defects of recognition; the patient sees and hears but he does not understand. Now there are other defects of recognition than those concerned with words. He may see objects, but may not recognise them by sight; he may taste, smell, touch objects, but fail to recognise them by these sense avenues. He may fail by one avenue but succeed by another. The general name given to this symptom of failure to recognise is agnosia. Thus we may have visual, tactile, auditory, gustatory, olfactory agnosia. From this point of view word-deafness is a variety of auditory agnosia; it is agnosia for the sounds of words. "Transcortical sensory aphasia," as we have seen, is agnosia for the meanings of words. Exactly analogous defects can be demonstrated in the case of word-blindness and in the case of the musical functions.

On the expressive or executive side, the patient with expressive aphasia has no paralysis of the musculature of lips, tongue, palate, &c., but he cannot speak. In agraphia, there is no paralysis of the small muscles of the hand but he cannot write. The generic term now employed for inability to perform certain acts, where no paralysis prevents their execution, is apraxia. Looked at in this way, motor or expressive aphasia is apraxia of the lips, tongue, palate, &c., for the movements of speech. Agraphia is apraxia of the arm and hand for the movements of writing. Aphasia and agraphia may thus be, and not infrequently are, part of a larger apraxia—viz., apraxia for other movements than those implicated in speech. Sensory or receptive aphasia may be, and often is, part of a larger agnosia—i.e., an agnosia for other things than words.

CONCLUSION.

Appreciable advantages are secured by regarding aphasia as part of a wider cerebral syndrome—viz., that of apraxia and agnosia. If aphasia is to be considered a disorder of symbolic thinking, it is important to grasp the fact that such disorder may reveal itself where no words, as such, come into the question at all. Yet unless some explanation such as that provided by the conception of apraxia and agnosia is offered, the limits of aphasia proper will be stretched unjustifiably. A patient who dresses himself wrongly or makes mistakes or "short-circuits" in performing any act such as lighting his pipe, shows a disturbance which cannot by any legitimate means be regarded as aphasia, but the disorder is certainly one of agnosia or of apraxia. By the utilisation of these modern conceptions the way is paved for a more comprehensive insight into cerebral activities, both on the receptive and on the executive side.

ECLAMPSIA AND ITS INCIDENCE.*

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IN presenting a new conception of eclampsia, I have in mind not the fits and coma, but the toxæmia and maternal visceral lesions. That the toxæmia causes fits and coma is admitted: the problem lies in the causation of the toxæmia. Several explanations have been suggested—notably that the toxæmia results from necrosis of the placenta; Young considers that it arises from a placenta undergoing autolytic changes.[20 21] Presumably the placental toxins, besides causing a toxæmia, also determine the lesions pathognomonic of eclampsia. Whether Young would allow that the maternal visceral lesions are of importance with regard to the toxæmia he has not (as far as I am aware) definitely stated. In support of his opinion, Young referred, a year ago, to the effect of releasing a tourniquet above the shattered part of a limb.[21] It must be allowed that the absorption of chemical bodies (toxins) arising from the extravasated blood and damaged tissues does produce a toxæmia; but that absorption does not produce eclampsia. Such a procedure is not followed by convulsions and coma; nor has necrosis of the liver and kidneys been demonstrated post mortem in such cases.† How trying would it be if every bruise produced eclampsia!‡ To suppose that changes of a like order in the placenta cause eclampsia is, in my opinion, equally absurd.

Rôle of Maternal Visceral Lesions.

My conception, as opposed to that of Young, is that the maternal visceral lesions explain the toxæmia. That such visceral lesions precede eclampsia must be admitted; they cannot be merely terminal events in the disease. Although we may believe that the hæmatomata of the liver, sometimes found, are caused by the fits, and even that the fits exaggerate the pathological process, the view that the fits cause the lesions is untenable. Sometimes there are no fits, and the case ends with coma; but coma cannot cause the visceral lesions. In the albuminuria, the presence of casts, vomiting, and manifestations of hepatic derangement we have evidence that a change in the kidneys and liver often occurs long before

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† It is stated that the injection of the products of damaged muscle, experimentally, may kill the animal at once or later; and that in the latter case changes in the liver resembling those in eclampsia are found. (Quoted by Young in his argument.[21])

‡ According to Young, even a placenta, presenting no macroscopic change, may cause eclampsia.[21]

eclampsia supervenes. And if such lesions arise, a toxæmia must develop. A necrosis, a cloudy swelling, or even a mere persistent inactivity of cells of such important organs as the kidneys and liver, cannot exist to any extent without causing a toxæmia. If the liver is not working sufficiently, a rise of amino-compounds (and allied bodies) in the blood must occur §; and if simultaneously the kidneys are inactive, the percentage increase must become great. Such substances come largely from the intestine; and the importance of food, especially of protein food, in the rise of toxæmia is well known, and in the treatment of these cases relative or complete starvation holds a high place. Pinard, in many years' experience, had never seen eclampsia occur in a woman kept on milk for eight days (Smyly[16]). Hastings Tweedy allows water only; I agree with him that in these cases milk acts as a poison. But whilst Prof. Tweedy seems to think that milk or other foodstuff is absorbed unchanged or insufficiently changed, because of the absence of the proper enzymes or antibodies in the intestinal wall,[17] I am of the opinion that poisonous effects arise because the liver is incapable of playing its true part.

Toxæmia an Aberration of Normal Metabolism.

The toxæmia which ends in eclampsia is for me simply an aberration of normal metabolism, and eclampsia simply a uræmia, distinguishable from other acute uræmias only in the method of its production. The condition of the blood and urine in the pre-eclamptic state supports this view. It was recently pointed out that there is usually no increase in the non-protein nitrogen and urea in the blood in these cases, and that this fact serves to distinguish true eclampsia from uræmia due to chronic interstitial nephritis complicating pregnancy.[7] But how can such an opinion be admitted, if it is allowed that the liver is necrosed to any extent, or that its cells are rendered in any way inactive? We can understand that the urea should not be increased or should even fall, but it is impossible to think that amino-compounds do not enter the blood in greater extent than before, provided the intestine contain them. Indeed, a direct contradiction to the statement is afforded by the work of Killian and Sherwin, who found that in 22 cases grouped as hepatic toxæmias (in 20 of which convulsions occurred), the non-protein nitrogen was invariably high above the normal limit, being doubled in some cases. The uric acid, similarly, was much increased; on the other hand, the urea was diminished.[6] This is in line with the urinary changes. There is, I understand, in the urine of these cases a high proportion of undetermined nitrogen[19]; where can the latter come from, except from the blood?

Opinions of Other Workers.

Other workers have believed that the maternal visceral lesions are primary. Lever, in 1843, believed that puerperal convulsions result from undue pressure by the pregnant uterus on the renal veins; and that such changes as occur in the blood are due to the consequent interference with the function of the kidneys. In support of his opinion, he pointed to the differences which obtain in different pregnant women in respect of the bulging of the belly wall—arguing that such differences show that the kidneys must be subjected to more pressure in some than in others.[8] And although his conception fell through—because pressure on the renal veins could not be admitted, and because it did not explain the hepatic lesions, at that time unknown—yet subsequent authors have been unable to demonstrate that the differences in the belly wall, to which he referred, are without significance in this question.‖ Similarly, in France 50 years later, hepatic insufficiency is apparently regarded as explaining eclampsia. Bouffe de Saint-Blaise, following Pinard, apparently believes that a lesion of the liver is primary; and that such always precedes and indeed is the cause of the kidney lesions. But he admits that to explain the hepatic change is embarrassing. He attributes the lesion to "heredity, some previous disease, or some other morbid disposition"[2]—an explanation so weak that no one will accept it.

In recent years the difficulty has always been to explain the maternal visceral lesions; this difficulty has led to the postulation of a preceding toxæmia—arising from the placenta, the ovary, the thyroid, the breast, the intestine, and even from the fœtus itself. No one, apparently, has attempted to differentiate such a suppositious toxæmia from the toxæmia resulting when liver and kidneys have become diseased; yet clearly, if a preceding toxæmia arises, the two toxæmias must be very different. Admission of the existence of maternal visceral lesions before the onset of the fits does not, of course, dispose of the possibility that a strange toxæmia arises before the visceral lesions, or, indeed, that it causes them; but such an admission injures that hypothesis very severely, for granted the existence of such lesions, everything in eclampsia, except these lesions, is explained. Given the maternal kidney and liver lesions, it is unnecessary to look for a strange toxin arising from anywhere.

Rise of Maternal Liver and Kidney Lesions.

My conception is new in this, that irrespective of a preceding toxæmia, it explains the rise of the maternal kidney and liver lesions. In my opinion the necrosis is ischæmic—a necrosis due to a shutting-off of blood-supply determined by an occlusion, not of the supplying arterioles, but of the capillaries into which these arterioles lead; and the occlusion is produced, not by a thrombosis, but by a pressure. The thrombosis is secondary (not primary) to the necrosis; the pressure is an exaggerated intra-abdominal pressure, produced in certain cases of pregnancy, to which rises induced by activity, and especially by labour, are superadded. In some cases liver lesions, in others kidney lesions, may appear first and be most marked; as a rule, both arise together. Such a compression of the kidneys, for instance, will clearly explain the anuria, which in the presence of a toxæmia induces the fits. But a compression of kidneys and liver, if great enough and persistent enough, will explain the necrosis of their cells (and, indeed, of the preceding change), whereby a toxæmia appears. It will explain not only the visceral necrosis, but also the selectiveness of this necrosis; it explains necrosis occurring in the kidney and in the liver cells, whilst the cells of the stomach, intestine, and pancreas escape. That such a force is in play is indicated not only by the futility of alternative hypotheses, but by many positive considerations.

Outline of the New Conception.

With the time at my disposal it is impossible to do more than briefly outline this conception. It is based on the previous conception that intra-abdominal pressure is a vital force,[11] dependent on the reactions of the body wall muscles, and fundamentally related with general, and more particularly with visceral, metabolism. It was the natural result of the discovery that intra-abdominal pressure is raised in pregnancy, and of the reasoned opinion that this pressure is more raised in some cases than in others. It is confirmed by the incidence of eclampsia. Many considerations show that intra-abdominal pressure is intimately related with general metabolism,[12] and its increase in pregnancy has been demonstrated.[13] It was objected that the pressure found in accessible viscera is not an index of the intra-abdominal pressure, but the result of contraction of the gut wall.[15] But this view is untenable. In 1917 I performed Cæsarean section for eclampsia, and with the manometer in position made the following readings of

§ Caldwell and Lyle seem to think differently.

‖ Ahlfeld's conception (1908) seems to have been similar. He laid stress on the pressure within the abdomen, and pointed to the striæ in the skin as evidence of it. And he wrote:—"Without a preceding insufficiency of the kidneys, no puerperal eclampsia." But he believed that a specific poison is at work which only in pregnancy is secreted.[1]

rectal pressure. In the left lateral position, into which the comatose patient was turned prior to operation, the pressure was 25 mm. Hg (in the normal non-pregnant the pressure in this position is 6 mm. Hg). In the supine position the pressure was 35 mm. Hg (in the normal non-pregnant it is 10 mm. Hg). On opening the abdomen (whereupon the incision simply gaped) the pressure dropped to about 30 mm. Hg; and after removal of the child the pressure registered was 10 mm. Hg. These measurements show that the pressure values found in pregnancy are not due to the tone or contraction of the visceral musculature, stimulated into activity by inserting the bag into some viscus. They indicate beyond doubt that the intra-abdominal pressure is raised, and raised considerably, above the non-pregnant normal.

Differences in the form of the abdomen, especially in development of its muscular walls, and in the degree of its distension, indicate that differences occur in intra-abdominal pressure at corresponding periods of pregnancy. It is reasonable to suppose that the pressure, as pregnancy advances, becomes greater in strong muscular women than in those who are weak. The former necessarily have strong muscular abdominal walls and strong muscular thoracic diaphragms, and when they become pregnant it is not difficult to understand that their muscles offer a more tenacious and marked resistance to expansion of the abdomen than do those of women more fragile or diseased (phthisical). It is to be expected that in primigravidæ, in whom the belly wall has never before been inordinately stretched, greater pressures should occur—other things being equal—than in pregnant multiparæ: similarly, it is obvious that tight lacing must cause greater pressures than in those who go loose.[5] So, also, the greater the abdominal distension per unit of time (as in twins, hydramnios, and concealed accidental hæmorrhage), the greater must be the pressure.

Incidence in Strong Pregnant Women.

It is just in cases in which such conditions obtain that the toxæmia of pregnancy is found and in which eclampsia is so prone to occur. I take them briefly in order. Many observers have stated that eclampsia selects, or appears more commonly in, strong muscular pregnant women. In spite of this recognition writers in recent years have paid little attention to the association, being apparently obsessed with the idea that some strange toxin arises as the primary event. Why do 60 to 80 per cent. of all cases of eclampsia occur in primigravidæ, especially in those of strongly muscular type? Are we to suppose that such are especially prone to develop strange toxins, from placenta or breast, intestine or thyroid, whilst the weak and diseased react otherwise? In the woman's first pregnancy, is her body, with its ancestral memories, unprepared for the state of pregnancy *because of good health?* If eclampsia depends on a lack of chemical adaptation, or on a proneness to develop strange toxins, then surely good health, robustness, and muscularity should not stand in such a conspicuous relation; moreover, eclampsia should occur as a rule quite early in pregnancy, instead of —as is usual—quite late. Another explanation must be sought for; it is to be found in the interference with visceral metabolism caused by the pressure change induced in pregnancy by the reaction of muscle. It is not surprising that if the intra-abdominal pressure is related to visceral metabolism, if its undue increase can cause metabolic aberrations, ¶ that such should show themselves more commonly in primigravidæ, and especially in strongly muscular primigravidæ. The proneness of such women to eclampsia is itself evidence that the preceding toxæmia is determined by a physical, not by a chemical disturbance.

Incidence in the Unmarried Pregnant Woman.

The case of the unmarried pregnant woman is important, for it affords experimental proof of this conception. How is her proneness to eclampsia to be explained? In such cases the placenta cannot be peculiarly liable to degeneration or necrosis; the manner of living must afford the explanation, and in this the fear of discovery plays the chief part. The only available means is constriction by corsets to prevent the abdominal distension which the woman in wedlock has no motive to hide. That these patients tight-lace is evident on inquiry.[14] This act, in my opinion, is the causal factor explaining eclampsia in these cases; and many writers have referred to the effect of dress on its incidence. There are other factors, of course—for instance, the patient's occupation. Many are domestics, who do house-work and washing; several also eat heartily, in spite of vomiting, wind, and indigestion. But these factors are subsidiary; they occur in many cases of eclampsia, but do not of themselves explain its prevalence in unmarried pregnant women.

Incidence in Other Types.

Primigravidæ, strong muscular pregnant women, and unmarried pregnant women, types so prone to eclampsia, may be regarded as forming a class by themselves. The selectiveness of eclampsia for these is sufficiently remarkable. But there are other types, which also form a group by themselves, the proneness of which to eclampsia is also remarkable. I refer to cases of multiple pregnancy, of hydramnios, of concealed accidental hæmorrhage, and of hydatidiform mole. The fact that eclampsia appears in such cases indicates that its cause does not reside in the contents of the uterus, because the contents in these several types are so different from each other. In spite, however, of their dissimilarity the uterine contents in at least three of these types—in cases of twins, hydramnios, and concealed accidental hæmorrhage—have one conspicuous feature in common—namely, that the size of the uterus for the period of pregnancy is more or less considerably larger than it should be. The condition obtaining in hydatidiform mole is for the moment uncertain, and I leave it for others to discuss.**

This increased size is a condition affecting intra-abdominal pressure; if the uterus grows more rapidly than is usual, then—other things being equal—higher pressures will prevail. The greater the distension of the abdomen per unit of time, the greater the response of the enclosing muscles. This response is not a nervous peculiarity or disorder: it is a normal, a natural effect. It is the result of the stretching of the muscle fibres, and of its degree and rate of progression. If the abdominal distension occurs at a greater rate than is usual in pregnancy, the spastic state of the enclosing muscles[13] must be induced earlier and have a greater effect. Even where the enclosing muscles are not well developed at the beginning of pregnancy, if twins or any of these other abnormal ovular conditions obtains, an exaggerated pressure may occur—especially if the increase in the volume of the uterus is acute (as in acute hydramnios) or sudden (as in concealed accidental hæmorrhage). In all these cases the more rapid advance of the abdominal distension has the same effect as originally good muscles; and if the latter in a first pregnancy determine an exaggerated intra-abdominal pressure, then a rapidly growing uterus in later pregnancies gives the same result. Thus, again, we have the relationship of an exaggerated intra-abdominal pressure with eclampsia.

¶ That ovarian cysts, by their mere pressure, can cause serious noxious effects, is plain from history. According to West (1858), among the causes which combine to destroy the patient is "the disorder of the functions of other viscera, as the tumour by its increasing size presses upon and disturbs them."[15] And Malcolm and Gibb (1921), referring to a case in which a very large quantity of fluid was removed from time to time from such a tumour, say: "The case now related shows that sometimes an ovarian tumour causes death simply from exhaustion and pressure . . . it was only by constantly removing the pressure that the patient could be kept alive."[16]

** Prof. Briggs has shown that the size of the uterus for the period of the pregnancy in cases of hydatidiform mole is often smaller than it should be.[8] The question is whether this is so when eclampsia—or, rather the preceding toxæmia—appears.

Incidence in Labour.

Lastly, there is the effect of labour to consider. Labour naturally causes, at intervals more or less prolonged, very great rises of intra-abdominal pressure; and if an exaggerated intra-abdominal pressure is related in a causal way with the rise of the maternal visceral lesions, labour should sometimes be related to eclampsia. Whilst eclampsia usually induces labour, the latter occasionally precedes the unconsciousness and the fits. Post-partum eclampsia, I submit, must be attributed to the effects of labour; in such cases labour no doubt acts on viscera prone to the disease, but this proneness is explained by the state of pregnancy—i.e., by the pressure which has prevailed. We know that the albuminuria of pregnancy is made worse by labour; and even that albumin, at times, first appears during this act—thereby bringing labour into line with the strains of athletes. Labour occasionally causes some transient change in the kidneys; so also it sometimes determines a change in the liver—even necrosis!

The evidence of accouchement forcé in eclampsia must be borne in mind. Before this treatment was superseded by Cæsarean section it was believed by some to have a pernicious effect—the reason, I submit, being that it caused too much straining. The inference is that too much straining acts deleteriously on kidneys already diseased, as also on a liver already inactive, about to necrose, or in parts necrotic. The effect of prolonged labour due to obstruction must also be remembered: from the evidence at hand it seems that even healthy kidneys and a healthy liver can become necrosed by this means. The history of vagino-fixation, should the patient become pregnant, appears to afford such evidence. Macan relates a series of disasters following the operation from the German School. Eclampsia occurred certainly twice, and I believe three times, being attributed to some angular distortion of the ureters due to dislocation of the bladder. But this dislocation of bladder and kinking of ureters will not cause necrosis of liver cells. The only factor at work to which this causation can be assigned was, I submit, the straining for hours.†† [9]

Conclusion.

I shall not enter upon the question of the effect of an exaggerated intra-abdominal pressure on the blood flow through the viscera. I simply remind you that the blood in its course chooses the easiest path, and that not all organs, or all parts of the same organ, are supplied in quite the same way. The great mass of blood reaching the liver has first to pass through the gastric and intestinal capillary network—with the possibility of escape by œsophageal and hæmorrhoidal veins, or, indeed, with rupture of gastric capillaries, by way of the stomach, as black vomit—for instance, during labour—which I suppose every one has seen. And as regards the kidneys, the blood reaching the convoluted tubules has first to traverse the capillary networks forming the glomeruli, with the possibility of escape by way of the medulla. Clearly, if the blood is obstructed in the cortex but escapes by the medulla, the selectiveness of the necrosis in eclampsia is explained. Similarly, if the blood flow through the liver is sufficiently impaired, liver inanition and patchy necrosis becomes intelligible. The question is whether an obstruction due to pressure and sufficient to cause such changes actually occurs in these secondary capillary areas. Does a study of intra-abdominal pressure and of the incidence of eclampsia warrant the acceptance of the idea? I submit that the evidence more than suffices to justify such a conclusion.

(*Continued at foot of next column.*)

†† Ruhl made a journey of some hours to see a patient on whom he had performed this operation, on receiving from the midwife a message that though the woman had been in labour more than 48 hours, and the pains were very strong, the os uteri could not be felt (Macan). This patient, however, recovered without eclampsia.

VALUE AND COMPARISON OF RENAL EFFICIENCY TESTS.

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VARIOUS methods have been suggested during recent years for the estimation of the efficiency of the kidneys, both for the purpose of general prognosis and for guidance in treatment. It is necessary that any method to be generally employed should, in the first place, be both accurate in result and, in the second place, reasonably simple to perform. Among the tests discarded, at least to a considerable extent, as not fulfilling sufficiently these requisites, are the coefficient of Ambard, the test-meal or excretion-fixation method, and the diastase test. The coefficient of Ambard is a figure representing the relation between the amount of urea in the blood and the urea excreted daily in the urine. Objections have been raised against this method—by Chace and Myers,[1] that it does not give information beyond that obtainable by estimation of blood-urea; by Addis and Watanabe,[2] that the rate of urea-excretion is not dependent upon its concentration in the blood and urine; and by Van Slyke and Cullen,[3] that the method contains several inherent fallacies. The test-meal method of Mosenthal and Lewis,[4] which involves careful collection of the urine at two-hourly intervals throughout the day and rigid adherence to meal-times, is for this reason liable to fallacy; otherwise it is simple to carry out, and consists in the comparison of day and night urines in regard to quantity and specific gravity. The diastase test, which consists in estimating the activity of amylolytic ferment excreted in the urine, has been described by MacLean and Russell[5]; but as the amount of pancreatic diastase excreted both by healthy persons and by nephritics varies within wide limits, and as

(*Continued from previous column.*)

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the test is troublesome to perform, it has not found general acceptance.

Tests for Estimation of Power of Kidneys.

The three tests which, in the writer's opinion, are of most value in helping the clinical observer to form an opinion as to the power of the kidneys are: (1) the phenolsulphonephthalein test; (2) the urinary urea-concentration test; (3) the amount of blood-urea. Cases illustrating the figures afforded by these tests and the results deduced from them are included in the following three tables. In the first place a brief outline of the methods will be given.

1. *Phenolsulphonephthalein Test.*—This test, introduced by Rowntree and Geraghty, has been used by the writer for the past nine years, both in civil practice and in the army, with uniformly satisfactory results as regards prognosis in kidney cases. It is carried out by injecting 1 c.cm. of fluid containing 0·6 g. of the pigment into the muscles of the back or limb. At the same time the patient drinks 600 c.cm. (a tumblerful) of water, and empties his bladder. This urine is discarded. Thereafter at one hour and two hours precisely the patient again passes all the urine in his bladder and these two samples are tested for the amount of pigment contained in each. For this purpose the one-hour sample is rendered alkaline by 10 c.cm. of 10 per cent. sodium hydrate solution, diluted to 1000 c.cm. with water, and filtered to remove any phosphates precipitated by the alkali. A portion is placed in one container of a Duboscq colorimeter for comparison with a portion of a solution consisting of 1 c.cm. of the testing fluid similarly diluted to 1000 c.cm. and placed in the other container. The tints being matched by turning the screws of the containers up and down, the percentage of pigment excreted in the one-hour sample of urine is calculated as follows: $\frac{N \times 100}{U}$ = percentage of pigment excreted, where N is the height of the column of fluid in the container holding the standard dilution and U the height of the column of diluted urine. For example: if N stands at 20 mm. and U at 40 mm., then $N \times 100 \div 40 = 50$ per cent. of the pigment excreted at the end of one hour. The second-hour sample is treated in the same way, and should contain considerably less pigment than the first-hour sample. If the same amount or more pigment is excreted in the second hour, this indicates delay and a depressed renal efficiency. The amount excreted in the two hours added together should total at least 70 per cent. in health, and may rise to 85 per cent. or even 90 per cent.

Other forms of colorimeter, such as that of Hellige, where a permanent standard is employed for comparison, are less satisfactory than the Duboscq, because their readings may be vitiated to the extent of 10 per cent. or more by the fact (personally observed by the writer) that the contents of the phenolsulphonephthalein ampoule supplied by different makers vary considerably both in quality and in depth of red colour. This difference does not affect the reading of the Duboscq colorimeter, in which the standard used is the contents of an ampoule similar to that from which the patient receives the injection. Great care must be taken in carrying out this test that the patient receives exactly 1 c.cm. of the fluid, that the bladder is completely emptied at the end of each hourly period, and that the injection is not made into œdematous tissue, from which absorption takes place slowly. It should be remembered that this test is really a criterion, not merely of kidney activity, but also of the whole mechanism of absorption, circulation, and excretion of the pigment. For this reason the writer prefers the muscles of the arm for injection rather than those of the back, where œdema is apt to collect, especially in bed-patients with kidney or heart disease. An important fallacy may be introduced by the presence of blood in the urine. To eliminate this in cases of acute nephritis, the urine should be allowed to sedimentise for 12 hours and decanted, or it may be centrifuged. In this way an approximately accurate reading can be obtained; otherwise, in acute nephritis the result of this test may be much more favourable than the actual excretion of pigment warrants.

2. *Urea-Concentration Test.*—This test, introduced by MacLean and de Wesselow,[6] is very simply carried out. It depends on the fact that if 15 g. of urea be administered by the mouth to a healthy person, it is quickly absorbed and excreted in the urine. In a specimen of urine passed two hours after the ingestion of this amount, there should be at least 2·5 per cent. of urea, while usually in a normal person the amount is 3·5 or 4 per cent. or in occasional cases more. If the proportion is only 2 per cent. or less it indicates a lessened power on the part of the kidney to concentrate urea, moderately severe cases of nephritis excreting only 1·5 per cent. or thereabout; while in severe cases, when uræmia is present, it may fall below 1 per cent. The test is carried out by administering orally 15 g. of urea dissolved in water. (This amount, which is equivalent to the daily excretion on a low protein diet, does the patient no harm, and is not unpleasant to swallow. The writer's practice is to carry out the phenolsulphonephthalein and urea tests concurrently, the urea being dissolved in the 600 c.cm. of water, which the patient drinks for the former test.) One hour after the urea has been administered the bladder is emptied and the specimen measured. At the end of the second hour, when the urea excretion is at its height, the bladder is again emptied, this specimen is measured, and the urea contained in it is estimated by the ordinary hypobromite process. Gerrard's apparatus may be used for this purpose, in which case 8 c.cm. of nitrogen is the equivalent of 0·5 per cent. of urea. If the urea-tube of Doremus be employed, two of these tubes must be used in each estimation, since the reading on the lower part of the scale gives too low a result in urines which contain an approximately normal amount (3·5—4 per cent.) of urea; the 1 c.cm. of urine, measured by the special pipette, is divided between the two Doremus tubes containing hyperbromite solution, and the readings of the nitrogen that collects in the two are added together. The estimation of urea-concentration and the phenolsulphonephthalein excretion do not always show absolute parallelism, but, generally speaking, they fluctuate together and in cases where they disagree the two methods form a useful check upon one another. If they differ to any considerable extent the tests should be carried out again next day.

3. *Blood-Urea Estimation.*—The amount of urea in the blood can be estimated without elaborate apparatus by means of the Soya bean "urease" ferment. The method as described by MacLean and Russell[7] is carried out by taking a small quantity of blood (3 c.cm.). This is incubated in a water-bath at about 40° C. for 15 minutes along with a small quantity of finely-powdered soya bean, the urea being thus converted into carbonate of ammonia. The ammonia is subsequently drawn over by the action of a water-suction pump into 25 c.cm. of centi-normal sulphuric acid, which after half an hour is titrated against 25 c.cm. of centi-normal sodium hydrate. The difference found by titration corresponds to the amount of sulphuric acid already neutralised by the ammonia evolved from the urea in the blood. From this the amount of urea is simply calculated, every cubic centimetre of difference being equivalent to 10 mg. of urea per 100 c.cm. of blood.

A few points demanding caution may be mentioned. The soya bean powder should be as fine as possible and if kept too long may be found inert, but it retains its fermenting power for at least several months after being ground. The temperature of the water-bath should not be allowed to rise above 45° C., as the ferment is apt to be destroyed above that temperature. The blood must be examined within a few hours of being drawn, because under certain conditions ammonia-producing bodies quickly form

TABLE I.—*Parenchymatous Nephritis.*

Case.	Age and sex.	Clinical diagnosis.	Date.	Blood pressure.	Amount, in c.cm., of 24 hrs. urine.	Albumin percentage.	Casts.	Phenol-sulphone-phthalein excretion percentage. 1 hr. 2 hr. Total	Urinary urea-concentration percentage.	Blood-urea, mgr. per 100 c.cm.	Wassermann reaction.	Remarks.
			1921									
1	13. M.	Acute nephritis.	2/4		570	0·04	Bl., ep.	40. 26. 66	3·2	63	–	Condition became subacute.
			11/4	115	1140	0·04	,,	60. 20. 80	4·0	41		
			26/6	112	340	0·06	None.	28. 22. 50	4·0	64		
2	58. M.	Subacute nephritis.	9/3	242	2000	0·6	Hy., gr., ep.	Trace.	1·3	128	–	Left hosp. unfit for work, invalid.
			4/4	204	1420	0·5	,,	,,	1·3	167		Died 7/11/21.
			20/4		2000	0·5	,,	5	0·8	94		
			2/5		2000	0·3	,,	2	1·0			
3	45. M.	do.	24/4	180	1700	0·55	Hy., gr.	37. 32. 69	2·5	52	–	Left hosp. for work in good health.
			4/5		700	0·25	,,	38. 26. 64	3·0			
			20/5	115	1600	0·01	,,	43. 28. 71	3·0			
			19/6	115	1450	None.	None.	49. 37. 86	3·6	20		
			2/7	115		Trace.	,,	41. 29. 70	3·4			
			4/7			None.	,,					
4	15. M.	do.	24/4	130	570	Trace.	Ep.	40. 24. 64	2·0	44	–	Left hosp. for work in fair health.
		(recurrent).	4/5	120	700	,,	,,	45. 34. 79	2·2			
			20/5		900	None.	None.	19. 40. 59	2·7			
			19/6	110		,,	,,	36. 15. 51	2·6	30		
5	37. F.	do.	17/6	192	900	0·07	Gr. few.	15. 14. 29	2·2	28	–	Health poor: choroido-retinitis.
		(post-eclamptic).	23/6	150	900	0·02	,,	11. 17. 28	2·0	26		
6	44. M.	do.	21/2	140		0·16	Hy.					Left hosp.:
		(post-alcoholic).	18/3			0·05	None.	48. 8. 56	1·5	29	+	robust, fit for
			30/3			None.	,,	58. 27. 85	4·0			work.
7	32. M.	Subacute nephritis.	2/6	160	1000	0·13	Hy., gr., ep.					Left hosp., con-valescent.
			20/6	115	1450	None.	None.	24. 27. 51	2·7	39	–	
8	17. F.	do.	18/6	130		0·04	Hy., gr.	40. 26. 66	3·2	26		Left hosp. in fair health.
				130		Trace.	*B. coli* infect.					
9	62. M.	Chronic nephritis.	4/7	122	1900	,,	Hy., gr., ep.	24. 25. 49	2·3	144	–	Gradual improvement: but chronic invalid.
			19/7	120	1000		,, and pus.	23. 21. 44	2·9	136		
10	37. F.	do.	14/6/11		3700	0·5	Gr., ep.				–	Severe optic neuritis in 1911. Leads healthy life 1921.
			18/5/21	160	1500	Trace.	Gr.	30. 40. 70	2·7	29		
11	38. F.	Acute nephritis.	11/7	120	500	+++	Bl., ep., gr.	23. 26. 49	3·1	29		Great œdema; very rapid improvement.
			13/7		1200	0·3	Ep., gr.					
			23/7					21. 24. 45	2·5	30		
12	49. F.	Chronic nephritis.	18/4	140	570	0·15	Gr.	Trace.	0·8	349		Died of uræmia, 21/4/21.
			20/4		120	Much.		None.		371		
13	35. M.	do.	26/5	168	430	1·7	Bl., ep.	Trace.	2·3	131	–	Much improvement after three months' treatment; œdema gone; feeling well.
			17/6	148	860	0·6	,,	12. 13. 25	2·5	134		
			23/6	150	1150	0·4	,,	5. 17. 22	2·0	114		
			4/7	162	1200	0·9	,,	7. 13. 20	2·5			
			12/7		2400	0·3	,,	12. 12. 24	2·4	73		
			25/7	180	1300	0·4	,,	33. 20. 53	1·4	45		
14	24. M.	do.	31/5	210		1·2	Hy., gr., bl.				–	Poor health, but fit for light work.
			18/6	182	900	0·7	,,	30. 25. 55	2·2	25		
			26/6	172	1900	0·9	Hy., gr.	18. 17. 35	2·0	79		
			9/7	138	1200	0·6	,,	31. 23. 54	3·5			
			25/7	146	1700	0·4	,,	26. 23. 49	2·2	33		

TABLE II.—*Interstitial Nephritis.*

15	68. M.	Interstitial nephritis.	8/3	250	1200	0·6	Gr., hy.	0. 30. 30	1·7	54	–	Headaches; fit for light work only.
			3/4	230	1000	Trace.	,,	0. 30. 30	3·0			
			12/5			None.	None.	10. 42. 52	2·5			
16	58. F.	do.	5/5	300	1600	Trace.	Hy., gr.	36. 30. 66	2·3	28	–	Retinal hæmorrhage, but leads active life with care.
			1/6	260		,,	,,					
17	66. M.	Arterio-sclerosis.	30/3	154	1300	,,	None.	25. 28. 53	1·7	37	–	Dilated aorta.
			4/4	150	1700	,,		20. 33. 53	1·0	38		Chronic invalid.
			1/5	140	1200	None.		24. 27. 51	2·2			
18	84. M.	do.	9/4	220	1500	Trace.	,,	33. 36. 69	1·5	26	–	Excellent health for age.
			15/4		1400	None.						
19	57. M.	do.	28/6	205		Trace.	Gr.	36. 27. 63	4·0	144	–	Severe headaches, fit for light work only.
			29/6	145		,,						
			8/7	142		,,						
20	60. M.	Interstitial nephritis (carcinoma).	2/4		500	,,	None.	0. 35. 35	3·0	29	–	Intestinal obstn. Ascites; died. P.M. carcinoma, cystic kidneys.
			1/5		650			0. 33. 33	3·5			

TABLE III.—*Cardiac Decompensation; Secondary Renal Inefficiency.*

21	31. F.	Cardiac dilatation.	17/5	102	1200	Trace.	None.	36. 21. 57	2·5	24		Recovery after rest in bed.
			1/6	120		None.						
22	68. M.	Mitral disease; auricular fib.	19/3	92	570	0·3	Hy.	8. 8. 16	2·5	34	–	Died suddenly, 18/4/21.
			6/4		700			27. 30. 57	2·2			
23	61. M.	do.	21/3	110	850	Pres.	Bl., ep.	20. 20. 40	2·0	61	–	Died; heart failure.
			6/4		430	,,		26. 30. 56	3·2			
24	12. M.	Mitral and tricus; endocarditis.	18/4	124	1200	0·02	Hy.	42. 30. 72	4·0	21		Dev. pericarditis; chronic invalid.
25	64. M.	Mitral disease; auricular fib.	17/5	110	600	0·02	Hy., gr.	0. 16. 16	2·7	37		Chronic invalid.
			20/6	110				6. 20. 26	2·8			
26	28. F.	Mitral stenosis.	27/5	125	1200	Trace.	Gr.	40. 30. 70	2·2	28		Recovered health.
27	30. F.	Mitral disease; auricular fib.	14/3	110		Pres.	Hy.	10. 10. 20	2·4	44		Chronic invalid.
28	26. F.	Mitral stenosis.	13/3	110	1500	None.	None.	30. 10. 40	1·7	29		Recovered health.
29	47. M.	Aortic incompetence.	28/6	128	1500	Trace.	,,	0. 20. 20	2·4	44	+	Chronic invalid; failure of compensation.
			11/7		1000	,,		23. 12. 35	3·4			
30	69. M.	Mitral disease; sec. nephritis.	19/3	160	1450	,,	Hy.	0. 10. 10	1·4	27		Left hosp. improved; died suddenly 16/4/21.
			3/4		900	,,		33. 26. 59	2·5			

and too high an estimation results. The blood must be withdrawn before the administration of urea for the concentration test, since a considerable rise in blood-urea follows within two hours after the ingestion of the 15 g. of urea. The test is extremely delicate and reliable, however, and repeated examinations give practically identical results. The normal blood-urea lies between 20 and 40 mg. per 100 c.cm. Any estimation showing over 50 mg. may be taken as indicating urea-retention and a decided degree of kidney inefficiency. When it is over 100 mg. the patient is usually a chronic invalid, the highest figures (e.g., Cases 2, 9, and 13 of Table I.) being obtained in cases of chronic parenchymatous Bright's disease. A blood-urea reading of over 200 mg. may be taken as an indication of impending death, though it may rise (e.g., Case 12, Table I.) to 371 mg. or higher; in another case (puerperal septicæmia, showing fatty degeneration of the kidneys on post-mortem examination) it rose to 268 mg. just before death. As a rule the blood-urea changes slowly. In sub-acute Bright's disease it is not greatly raised, but in the uræmia of acute nephritis and in febrile diseases like pneumonia it may be raised temporarily considerably above the normal level. The negative evidence that it affords, in combination with other tests, is of great value. For example, one case with severe headaches and albuminuria, supposed at first to be nephritic, was found to have blood-urea 22 mg., phenolphthalein excretion 86 per cent., and urea-concentration in urine 6 per cent.; the kidneys were therefore exonerated and the case was subsequently found to be one of enteric fever. Another case of headaches with albuminuria had blood-urea 31 mg., phenolphthalein excretion 90 per cent., and urea-concentration in urine 3·7 per cent.; the albuminuria speedily disappeared, the case being one of neurasthenia with periodic albuminuria. In still another case of headaches, ultimately found to be occupational in origin, the blood-urea was found to be 21 mg., phenolphthalein excretion 90 per cent., and urea concentration in urine 2·5 per cent. In cases where the kidney disease is moderate in degree, the blood-urea may be constantly well within the normal limits, and the prognostic indications must then be drawn from the other tests.

Commentary on Table I.—The clinical diagnosis was made chiefly from the history of the illness, the amount of albuminuria, character of casts, and degree of cardio-vascular symptoms. It will be seen from Cases 2, 12, 13, and 14, that when the blood-urea is very high the blood pressure is usually high also; but this is not necessarily so, as in Case 9; and there is no ratio at all between them, and the blood pressure may vary considerably while the blood-urea remains practically the same, as in Case 5. Cases showing high blood-urea usually have a high blood pressure, but the converse is not necessarily true. As regards the other tests, the patient has periods of improvement—e.g., Case 1, where the phenolphthalein excretion rose temporarily to 80 per cent. coincidently with an increase in amount of urine and general physical betterment. This test, however, fell off again, and complete recovery did not take place. Most cases show this fluctuation; so that, except where the tests give either quite normal or very low results, conclusions as to prognosis cannot with certainty be drawn from an estimation on one occasion only. An amount of phenolphthalein excretion below 20 per cent. is always ominous, as in Cases 2, 12, and 13. In the writer's experience, if a considerable rise above 20 per cent. does not take place after two or three weeks of treatment the patient is not likely to survive more than a few months. On the other hand, Case 10, which has been under the writer's observation for some 12 years and which had (after parturition) severe optic neuritis and threatened uræmia in 1911, probably owes her survival to the relatively high degree of renal efficiency still shown by the tests in 1921. In general, a patient with phenolphthalein excretion over 50 per cent. and urea-concentration over 2·5 per cent., if there is no increase of blood-urea, is likely to become fit at least for light work; and if the case be not a prolonged one, the renal efficiency may be expected to rise to a higher level under appropriate treatment.

Commentary on Table II.—This table shows the condition in cases of arterio-sclerosis with kidneys presumed to be affected from the cardio-vascular symptoms that were present. In these cases when the phenolphthalein rose above 50 per cent. return to a moderate degree of health ensued; the urea-concentration always tended to be low, as the kidneys were readily stimulated to secretion of water, but in favourable cases the urea rose to about 2·5 per cent. before the patient left hospital. In cases of this type both blood pressure and blood-urea tend to be exceptionally high, but there is no relationship between the two, because when the blood pressure falls, as it readily does under treatment, no appreciable change takes place in the blood-urea.

Commentary on Table III.—This table includes cases in which the primary defect was cardiac, but clinical evidence of secondary renal involvement was present. In these the blood-urea is normal or only slightly raised. Whilst auricular fibrillation is present, the phenolphthalein excretion is considerably lowered, it may be to 20 per cent.; and the urea-concentration is low. Both characters of the renal secretion tend to improve as the heart recovers power. It is probable that some of the debility and danger in these cases of auricular fibrillation is due to the renal inefficiency. The complete recovery of health in Case 26 and the ability of Case 24 to maintain his life despite several very severe cardiac lesions were associated with an almost normal state of renal efficiency as revealed by these tests. The important feature has been frequently noticed by the writer that if, in cardiac cases, the kidney efficiency tests give an approximately normal or only slightly lowered result during the period of cardiac decompensation a very favourable prognosis can safely be given.

Conclusions.

1. The combination of the estimation of blood-urea, of urea-concentration in the urine, and of phenol-sulphonephthalein excretion, gives reliable information as to the functional efficiency of the kidneys.

2. The blood-urea estimation should form a preliminary investigation. If it rises above 50 mg. per 100 c.cm. of blood the condition is serious. If it is found to be persistently over 100 mg. recovery is not likely, and death will probably take place within a year. In uræmia it may exceed 200 or 300 mg. before death. The blood-urea may be normal while a marked degree of renal impairment exists; but in such cases the immediate prognosis is usually favourable.

3. The blood pressure shows no constant relation to the amount of blood-urea; though when blood-urea is permanently high the blood pressure is usually high.

4. The phenolsulphonaphthalein test in the writer's experience is the most valuable individual test. An excretion, which takes place chiefly in the first hour and which in two hours reaches 70 per cent. or over, gives a good prognosis so far as the kidney function is concerned. An excretion of 50 per cent. for two hours in either renal or cardiac cases is compatible with complete restoration of health. An excretion of about 30 per cent. is compatible with prolonged life, though on a low plane of vitality. When the excretion does not rise above 20 per cent. in spite of treatment, death within a year may be expected.

5. The urea-concentration in the urine test is simple, harmless, and gives valuable information. The amount fluctuates more in individual cases than does the phenolphthalein excretion. A urea-concentration over 3·5 per cent. indicates a satisfactory renal function; over 2 per cent. it is compatible with a fair degree of health; if it persists below 2 per cent., in spite of treatment, it is unsatisfactory.

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3. Van Slyke and Cullen: Jour. Biol. Chem., 1914, p. 211.
4. Mosenthal and Lewis: Jour. Amer. Med. Assn., 1916, p. 933.
5. MacLean and Russell: THE LANCET, 1920, ii., p. 1307.
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TUBERCULOSIS SOCIETY.—The annual meeting will be held to-day, Friday, at 7.30 P.M., at the Caxton Restaurant, Tothill-street, Westminster, London, and will be followed by a supper in the restaurant (tickets 4*s.* inclusive).

"TWILIGHT SLEEP"
AND THE GENERAL PRACTITIONER.

BY CHARLES H. S. HORWITZ, M.R.C.S., L.R.C.P. LOND.,
RESIDENT PHYSICIAN, LONDON HOME OF TWILIGHT SLEEP, STREATHAM, S.W.

THE administration of scopolamine-morphine as a routine during labour has now had an extended trial in this country, and it may not be inopportune to give details of my own experience of the treatment of a considerable number of cases by this method. The most erroneous ideas prevail even among medical practitioners as to its use and effects, and if this article serves no other purpose than to clear some of these misconceptions that undoubtedly exist, it will have been well justified. Many of my patients have had to run the gauntlet of repeated warnings and reprobations of well-meaning though misinformed friends, and women have told me that they dared not even tell their doctor of their intention to have twilight sleep, as he was an ardent opponent.

Current Misconceptions.

In a recent lecture delivered to the Edinburgh Branch of the Scottish Midwives' Association, Dr. Hugh S. Davidson said:—

"Some doctors are wholly in favour of the use of twilight sleep in every case, and others are equally emphatic in condemning its use in any case. Some of the laity, especially those who have experienced it personally, swear by it, whilst others, credulously swallowing every tale they have heard, inveigh against it owing to its alleged effects on mother and child, repeating, with additions, the story they have heard that it has filled the asylums with idiots. I have been told such things by patients to whom I have advised its use, and I may say at once that I have never come across such cases, nor have I been able to discover any in the experience of my medical friends. My personal opinion is completely in favour of its use, as you can judge by the fact that I have used it among my nearest relatives."

I was amused by a question put to me by a local practitioner who had come to the home to see a patient privately. "Twilight sleep," he said, "may be all right for the mother, but what about the dead babies?" He was almost incredulous when I assured him that we had not lost a single baby in several hundred cases. Another practitioner of 25 years' standing told me that he had timorously employed scopolamine in a single case with what he described as alarming results for, after an initial injection of morphia gr. ¼ and hyoscine gr. 1/150, pains entirely ceased for a number of hours, much to his distress. He had never again had the temerity to try the method. He was much puzzled to know what procedure I should adopt in a case that might require internal manipulation, and was surprised to learn that chloroform is not contra-indicated in "twilight sleep." Misconceptions such as these are very common, and I could indicate many more; but sufficient, I think, has been said to show that the whole subject is much clouded and obscured by a fog of misunderstanding and prejudice.

Personal Results.

I now propose to give an unbiased statement of its use from my personal results. At the outset a little discrimination is needed as to when treatment should commence. If it be delayed too long the patient suffers needlessly; if it be administered too early it is more than likely the pains will cease for some time, as was the experience of my colleague detailed above. I make it a rule never to give the first injection until pains are coming regularly every ten minutes, or if these are not fraught with much discomfort, to wait until they occur at five-minute intervals in primiparæ. In multiparæ treatment should, as a rule, begin as soon as definite labour pains are first felt.

The patient has a preliminary enema and empties her bladder. The room is darkened and her ears stuffed with cotton-wool soaked in olive oil, so that her attention shall not be distracted by anything. The attendants wear soft slippers. The initial injection should consist of scopolamine gr. 1/150 and morphia gr. 1/6, given subcutaneously in the gluteal region. I know it is often usual to give morphia gr. ¼, but increased experience has led me to adopt the smaller dose, and I never repeat the morphia. In half an hour a further injection of scopolamine gr. 1/450 is given and usually repeated in half an hour. In big fat subjects the second injection often needs to be scopolamine gr. 1/200. Thirst is generally complained of early, and water should be given to relieve it, but when once amnesia is established water should not be mentioned. Subsequent injections, varying from scopolamine gr. 1/150 to gr. 1/450, are regulated by the memory test, which requires a little experience for its successful application. The patient is shown some familiar article—a watch, a comb, or a hair-brush—and asked what it is. If she is asleep wait until she is aroused by a pain. She will probably recognise the article. Half an hour later the question is put, "What did I show you a little while ago?" If she recalls it at once without any mental effort another injection is given at once; if she is hazy and has difficulty in recalling it to mind, another half an hour is allowed to elapse, when some other article is shown her. I usually exhibit my silver cigarette-case for the third test, and it is often described as something quite different—i.e., a piece of paper or an envelope—and it was once called a scalp. It is necessary to be sure that she thoroughly visualises it, as there is always some dilatation of the pupil due to the scopolamine. The article selected should be held a little distance away and in a good light, which is screened afterwards. Judged from her replies one gauges her mental condition as acute, clear, slightly clouded, or very clouded. Frequently, after a few injections, there will be no need for further testing, as the patient herself gives gratuitous evidence of satisfactory amnesia. When awakened by a pain she might give vent to some such expression as "Go down and get the bread and butter." "Leave me alone, John." "I have to go out to the shops now." She will fall asleep until aroused by the next pain, and then make similar remarks.

Effect on the First Stage of Labour.—When the initial dose is given at the correct time I am certain that the first stage of labour is markedly accelerated. I will go so far as to say that the time of the first stage is in some cases actually halved. I have given a good deal of thought as to why this should be so, and can only conclude that scopolamine in some way or another acts as an irritant to the uterine muscle—if not on all unstriped muscle. It certainly causes some diuresis, and as the drug is excreted by the kidneys this has the advantage of rapidly removing it from the system.

Effect on the Second Stage.—The second stage of labour is usually affected adversely, being often prolonged, and for this reason forceps deliveries are more frequent in "twilight sleep" than in cases without drug treatment. The irritant action of the drug plays no part in assisting the second stage, even when the drug is withheld until the second stage is reached. I was at first inclined to the theory that the hurrying on of the first stage might tire the uterus, causing a modified inertia, but I have since abandoned the idea, because, as just stated, the same delay occurs when the initial injection is given after full dilatation of the os uteri. I am now of opinion that the explanation lies more in the fact that the second stage is largely dependent upon voluntary assistance in bearing down for its completion, and voluntary effort is largely abolished in "twilight sleep." It is my invariable rule to allow the second stage to proceed for two hours, and then if there is no prospect of the immediate birth of the head I apply forceps with the strictest regard for asepsis. A few drops of chloroform are all that is needed to induce anæsthesia to the obstetrical degree. I have had no case of puerperal sepsis with the following technique:—

While I am "scrubbing up" a nurse thoroughly cleans the perineum with the aid of soap and water and a soft scrubbing brush. When the patient is ready, a Clover's crutch is applied, and she is placed across the bed on her back with the buttocks just projecting beyond the mattress, under which boards have been placed to make it firm. I wear a sterile gown and gloves. A sterile towel is placed over each leg, one across the abdomen and crutch, and one on the bed upon which the buttocks partially rest. I swab the vulva well with lysol, ʒi. to the pint, and also the vagina,

paying special attention to the urethra, preliminary to passing a catheter. Forceps are then applied and removed directly the head is crowned. Pressure with one hand over the sterile towel on the abdomen prevents the head receding. When the head is crowned a nurse injects 1 c.cm. of pituitrin deeply into the gluteal muscle. As soon as the child is born the cord is ligated; the child is then removed to another room so that its crying will not disturb the mother, who should be allowed to sleep quietly on, after having been made comfortable. I have always found the third stage quite normal in every respect.

It might be mentioned that at the commencement of the second stage I employ my time in applying hot fomentations to the perineum. These are wrung out of weak lysol, and serve the double purpose of sterilising the region and softening the tissues, thereby lessening the probability of a tear.

With regard to the vexed question of oligopnœa, I have only met with a few cases, in all of which the child spontaneously recovered without treatment of any kind. If wrapped in a warm blanket and left alone the baby will breathe normally in a minute or so. In one or two difficult forceps cases with a child born suffering from asphyxia pallida I have had resource to a hot bath and artificial respiration. The only deaths I have to record were twin premature babies—born at six months. Both breathed, but died shortly afterwards. The mother had only one injection, and the children would not have lived in any case.

Particular Advantages of Twilight Sleep.

Twilight sleep is of particular advantage in breech cases and in minor degrees of pelvic contracture, where it is desirable that the second stage should be prolonged to obtain satisfactory results. I have given it with conspicuous success in cases with heart disease, and I noticed that in his article on "Heart Disease and Pregnancy"[1] Sir James Mackenzie mentions that twilight sleep ought to be useful in such cases, but frankly confesses that he has had no experience of the treatment. In elderly primiparæ it is invaluable. One of its most striking benefits is in the appearance and feeling of well-being manifested by a patient after a long and difficult labour, which tends to endorse the absence of conscious suffering. Shock and exhaustion,are largely avoided, and with their avoidance the long train of nervous after-effects and disabilities are mitigated if not entirely abolished. Surely the memory of an exhausting and agonising labour must leave in its wake a host of neurasthenic tendencies with a vivid dread of a recurrence of the event—modified though that dread might be by the knowledge that second children are less of an ordeal. Apart from economic reasons, a dread of this kind must adversely affect the birth-rate of the country.

For the busy general practitioner the scheme I have outlined above must often prove impracticable. The late Dr. F. W. N. Haultain speaks of good results obtained by leaving the injections to a responsible nurse, in telephonic communication with the doctor. The injections are given at stated intervals. The initial dose of scopolamine gr. 1/150 and morphia gr. ¼ is recommended, and thereafter scopolamine alone gr. 1/450 is injected every hour. "Although not scientifically correct," Dr. Haultain adds, "this method is sufficient to acquire the benefits required without danger." I would only add to this that the nurse should be instructed to miss an injection during any hour that the patient is heard to mutter at random, and that in a number of cases the dosage will be too small to be effective. In cases exhibiting an idiosyncrasy for the drug, who become unruly in consequence, a few drops of chloroform is all that is needed to quieten them. I have only met with one case who became so unruly as to require restraint, and I abandoned treatment on that account. Complete amnesia, however, was present during her case, and she remembered nothing of the labour.

There is no doubt that the effect of the drug varies in individuals, and I have found that, as a rough working guide, the larger the woman the larger the dose she requires. It is because of this variance in reaction in individuals that acute differences of opinion exist both in medical and lay minds as to the benefits of the treatment, and I would urge medical men before they condemn "twilight sleep" to consider the impossibility of giving an opinion without experience.

In conclusion, I would state that the more I give twilight sleep the more I like it, and I consider it to be the greatest advance in obstetrics since the employment of chloroform. That it mitigates actual pain and does not merely obliterate the memory of it is evidenced by the absence of screaming—the needle prick of the injection often passing unnoticed—and by the general demeanour of the patient, which is indicative of well-being as opposed to conscious suffering.

[1] THE LANCET, 1921, i., pp. 1163, 1230, 1281, 1342.

DOMICILIARY TREATMENT OF BONE AND JOINT TUBERCLE.

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THE lesson of the war (reinforcing as it does some neglected lessons of the past) that infection has been an overrated, and depressed individual constitutional resistance a much underrated, factor in the production of tuberculosis, will have had its effect upon the mind of the tuberculosis officer. He will easily deduce that the outstanding indication for action is the fact that the disease is twice or thrice as common in the working class as amongst the rest of the community; and that the chief prophylactic measure, therefore, is economic—namely, social amelioration. He will now feel assured that housing reform, even if practicable under present conditions, will never suffice of itself; will see that much of the time spent in examining symptomless adult "contacts," or in delivering lectures promising an early abolition of tuberculosis, was wasted. And all this realisation that prevention is really in other hands than his, will, or should, make him a Voltairian cultivator of his garden—lead him, that is, to concentrate for the time upon treatment.

In this line there seems at first sight little of much promise. The sanatorium the tuberculosis officer rarely sees; tuberculin is deservedly dropping out of therapeutic use; lung collapse applies only to a scanty proportion of one form of the disease; chemo-therapy as yet only to the small group of skin tuberculides. But there does remain something. Two years ago I left Alton after a two months' stay kindly allowed me by Sir Henry Gauvain, to study the Continental methods of treatment of osseo-articular tuberculosis of which he is so accomplished an exponent; for that period of time I have been applying the working knowledge there gained in the ordinary practice of a tuberculosis officer, and the improvement in one's results is striking.

Problem of Accommodation.

In old days the general practitioner used perforce to send hip or spine caries to a general hospital, or try to get such into one or two overcrowded special institutions. The former plan was desperate. The general hospital had not accommodation enough, and the folly of making out-patients of those needing before all else continued rest in bed in one posture, is evident. Yet, unfortunately, practitioners are still prone to this method of disposal. What often happens is that the case is sent first for diagnosis, or confirmation of diagnosis, and then goes on attending for treatment. When the National Insurance Act came into force, sanitary authorities engaged beds at a special institution, perhaps an orthopædic hospital. I have had good opportunity of comparing treatment by some orthopædists with treatment by surgical tuberculosis specialists, and have found that of the latter to be the better; mainly, I think, by reason of

the superiority of their plaster work and especially of their splints, made of celluloid from a cast of the affected part, fitting perfectly, and therefore preventing reactivation and relapse; recidivism we know to be a pitfall in every form of tubercle. The point I wish to put is that a great deal of this work can be done, in his own district, by each tuberculosis officer.

Hygienic conditions in a working-class home are admittedly far below those of a country hospital; but then the home task is much easier. Consider the severity of the cases at Alton—bilateral morbus coxæ (I have seen only one such around Barnsley in seven years), cases with other multiple lesions, facial and skull caries (I had never seen this before), paraplegic patients, lardaceous disease, and so on. This allocation of patients is, to my mind, just as should be. The extra facilities and skill are best bestowed upon the unfavourable case. Early and slight disease may quite well be treated at home. In bone and joint tubercle the main principle of disposal is surely the converse of that in lung tubercle. Incipient consumption is sent to the sanatorium, while highly active or extensive affections are excluded therefrom; but, speaking generally, and with one or two exceptions to be mentioned below, in osseo-articular lesions, the early case should be kept at home, the more advanced sent away.

Description of Cases.

The above theses it is hoped to defend with a short account of the 30 patients with bone or joint disease treated here, as stated, in the last two years. They are as follows: Hip alone, 9; hip and knee, 1; spine, 8; knee alone, 7; elbow, ankle, 2 each; wrist, 1; total, 30. Of the 30, 22 were new cases coming under notice within this two-year period; these new cases comprised 1 elbow, 1 hip and knee, 4 knees, 7 spines, and 9 hips. Fewer than a third of the 22—viz., 3 hips, 2 spines, and 1 knee—needed sending away for institutional care. Two of these three hips were in very young children, in whom, as is taught and as I have found, recovery is slow; for early infection of itself argues a relatively unfavourable outlook; besides, sick infants require more attention than can be expected from an over-taxed working-class mother. The girl with an affected knee was sent off, after responding well to treatment, in deference to the teaching that tuberculous arthritis in that situation is on the whole of peculiarly unfavourable prognosis. However, from subsequent experience with patients who for indifferent reasons had to stop at home, I regret I did not keep the case and save the institutional bed for a worss case; more especially as the girl has just been discharged from Alton with arrested disease after the unusually short stay of three months. Both the spinal patients came from bad homes, one being an adopted child and the other of very poor parents. Thus medical considerations alone did not by any means dictate the choice in every instance.

The remaining 16 domiciliary patients all did, or are doing, practically as well as I have seen cases do at Alton and at Rivelin Valley, the Sheffield surgical tuberculosis hospital. Our plan of home treatment—and, be it noted, whatever the destination of the patient there is some unavoidable delay during which he or she remains at home and may as well be started on the road to recovery—our plan is to have the child's bed put next an open window, preferably on the ground floor for convenience of the mother. Then appropriate extension is applied, hyper-extension by means of a pad under the mattress in spinal disease, extension by weight and pulley for morbus coxæ. In one knee case with considerable flexion of the joint and subluxation of the tibia, straightening was effected by the "triple extension" apparatus, with its application of the parallelogram of forces, in five weeks; after ten had been spent fruitlessly in a general hospital with simple horizontal traction. It is soon seen if muscular spasm is disappearing at something like the normal rate. In hip disease, adduction or abduction will take long to correct, but if flexion does not yield soon, the bed-foot pulley having to be lowered something like three inches a week, then the case is obstinate and had better go to a more favourable environment. Simultaneously cold abscesses can be aspirated. When quiescence of the lesion is obtained with good position, then a plaster can be applied and the patient allowed up, of course on crutches in leg cases. Finally—often immediately—a plaster cast of the part is taken and a celluloid splint made. By the time this is worn out or outgrown, progress has usually been sufficient to render its replacement unnecessary. However, some further time should usually elapse before resumption of school attendance, because that depresses the general health and means extra risk of trauma. This interruption to education, avoided at special institutions by having visiting teachers, is the only absolute disadvantage of domiciliary treatment. But certainly there are not enough special institutions to treat all bone and joint tuberculosis, nor, as things are, enough funds available to increase their numbers or beds sufficiently. Besides, for adult patients the available accommodation is even more exiguous.

Results.

Of the 30 cases, 6, as stated above, were despatched to institutions. Quiescence of the lesion was secured in 14 of the remaining 24. By quiescence I mean disappearance of pain and muscular spasm, healing of any sinus or cold abscess, improvement in the general health, and complete or considerable correction of deformity. Three of these, one an ankle and one a knee, both with unmistakable clinical evidence of disease, the third a hip in which the diagnosis was confirmed radiologically, have now for some time discarded all apparatus and enjoyed full return of function. In four further cases the lesion was quiescent when the patient first came to my notice. This leaves 24 less 18, or 6 patients whose disease remains active. They are all adults, two of them ex-soldiers. An elbow (in plaster), a dorsal spine (in bed), and a knee (in a celluloid splint; operation refused) are slowly improving. Another spinal case is stationary. Two, a hip with many sinuses, and a knee far advanced in disease and complicated with extensive phthisis when first seen, are getting worse. There have been no deaths.

Of celluloid splints we have made 19 and repaired 4. Besides their remedial effect, they have sometimes given—as in the cases last cited—much palliation, and have rendered patients less of a drag upon their friends. Patients naturally prefer them to leather and iron appliances. Nurses take well to the preliminary stage of their construction—the pasting of layers of book muslin on to the plaster cast with celluloid dissolved in acetone—as it much resembles dressmaking. The later stages, fitting, riveting on of leather and duralumin, one must do all oneself. Its technique, like that of lung collapse, of nose and throat work, and of the rest of our speciality, needs proper learning, but, as the event has shown, is within the compass of a mechanical faculty distinctly subnormal. The admirable polish bestowed at surgical tuberculosis hospitals is not essential; and this saves time. That time which is indispensable is well spent: it looks as though in a year or two one could be master of the osseo-articular tubercle in one's district.

My thanks are due to Sir Henry Gauvain, to Dr. C. L. Pattison, surgical tuberculosis officer of Sheffield, and to their respective staffs—among whom must be named Mr. Green, orthopædic carpenter at Alton, whose hollowed leaden stand is most useful in the shaping of duralumin supports; and, lastly, to my two nurses for their keenness and industry.

HONOUR TO A SOUTH AFRICAN MEDICAL MAN.—On Oct. 21st, a presentation, consisting of a handsome silver tea and coffee service and salver, was made to Dr. M. W. W. Cowan, of O'okiep, Namaqualand, South Africa, on the occasion of his silver wedding, on behalf of the people of Namaqualand. Dr. Cowan has practised in the district for over 26 years.

A NOTE ON

GUELPA'S METHOD

IN THE TREATMENT OF GOUT AND GLYCOSURIA BY FASTING AND PURGING.

BY SIR HENRY LUNN, M.D., B.CH. DUB.

Dr. Guelpa's visit to the Royal Society of Medicine suggests to me to put on record the endeavours to combat various manifestations of gout in the one patient (myself) upon whom I have ventured to practise since I took my M.D. in 1887.

Thirty years ago, at the age of 32, I went to see my friend, the late Dr. Howard Barrett; I was suffering at the time of my visit from constant severe headaches, hæmorrhoids, and bad eczema. Dr. Barrett told me I was like "a volcano of gout ready to break out anywhere in any direction." He reduced my meat diet to very moderate limits with much advantage, but I was still pursued by gouty headaches, sleeplessness, and sluggishness of the liver.

Three years later I read Haig's "Uric Acid as a Factor in the Causation of Disease," and although Haig exaggerated the importance of uric acid in the causation of gout and other diseases, I found his book very valuable. In 1896, being still much troubled with gouty symptoms, I visited Tarasp, the waters of which resort contain a very large percentage of sodium sulphate. I was benefited greatly by a three weeks' course, which—together with Haig's views as to the value of sodium salicylate—led me to adopt a daily dose before breakfast of Carlsbad powders with 5 to 15 gr. (according to my condition) of sodium salicylate. I found also that small doses of potassium bromide with the salicylate had a remarkable and valuable influence upon my nervous system; these and a short sleep before dinner were necessary if I was to avoid bad nights and interference with my work. By these means I was able to keep down, within certain limits, the gouty tendencies which Dr. Barrett had considered so serious. Nevertheless, in Dec., 1899, Dec., 1900, Sept., 1903, Feb., 1906, and Jan., 1909, I had five prolonged attacks of acute tonsillitis and pharyngitis, followed each time by lumbago and severe erythema nodosum, which on each occasion laid me aside for periods from four to six weeks. These attacks have ceased since the adoption of prolonged fasts.

A First Fast.

In 1910 I read an article by an American in one of our monthly reviews on the fasting remedy. It was Easter Day. Immediately after reading the article I stopped eating for a fast of five days. On Easter Monday I had an 18-hole round of golf in the morning with much enjoyment, and in the afternoon attended to various matters. On Tuesday I had an exceptionally long day at business, 8.30 to 5.30, as there was no time occupied by meals. On Wednesday I commenced work in my office at 8.30, and after a very full day attended a dinner of the Isis Editors at Simpson's Tavern, where I spent the time in conversation, sipping Apollinaris Water meanwhile. I finished up at the Savage Club on more Apollinaris, getting home to Harrow in perfectly good form at 12.30 A.M. On Thursday I continued the fast, and on Friday and Saturday took milk for two days, afterwards returning to my ordinary diet, with my whole system immensely benefited by the experiment.

Systematic Fasting.

I read various American books, and in the following year took a nine days' fast on similar lines, drinking water copiously throughout, but only consuming during the whole period a pint and a half of milk divided into three glasses taken on three of the coldest days when I wanted additional fuel. Since that date I have tried every summer to put in a long fast, drinking only water during the warm weather, when the absence of fuel in the system could best be borne. I have also observed as far as possible a weekly fast for 11 years with great benefit. If I omit the weekly fast I at once suffer from a diminution of mental energy. The American school, represented by Allen of the Rockefeller Institute, did not recommend purgation with the fasting, and in common with all to whom I have spoken who have tried this treatment, constipation and a thickly-coated tongue were amongst the difficulties of the fast. In following years I gradually resorted to larger and larger doses of sodium sulphate to obviate these symptoms.

Treatment of Glycosuria.

In 1916 the anxieties of the war in business and domestic affairs caused my health to suffer. I was examined by my friend Dr. de Havilland Hall; going with him into his laboratory I was surprised to find that his test showed me to be suffering from glycosuria, which at that time amounted only to an excretion of 35 gr. of sugar per day. A carbohydrate-free diet with codeia sulph. for a short time, and a visit to the Alps, entirely removed these symptoms. My diet consisted of eggs, fish, green vegetables, excluding peas, cocoa with cream, and special biscuits of nuts, and a particular bean (kalaki), with butter ad lib. A similar attack in 1917 was quickly terminated by the same regimen and I had no recurrence until the summer of this year, when I had a sharp attack in consequence of special anxiety and strain in my home life.

Guelpa's Method.

In Paris, returning from our visit to the Spas, I called with a well-known London physician upon Dr. Guelpa, who was the first European to systematise the fasting treatment and the first physician to advocate extreme purging. He promulgated his views in 1908 and was met with vigorous opposition. His views were discussed in 1908 at the Therapeutical Society and the Society of Medicine in Paris. Laufer claimed that no invalid, no diabetic, would submit to three, four, or five days of absolute fasting combined with a daily purge. Burlureaux stated that reiterated purging might produce certain disorders and a nervous shock unfavourable to these patients, and Linossier maintained that if fasting, as we have known for a long time, gets rid temporarily of the sugar, it weakens patients and predisposes them to acidosis and to coma; and, moreover, that to stop glycosuria is not to cure diabetes, of which the presence of sugar in the urine is only one symptom. Contrary to the opinion of the American school of Allen who does not use drastic purges, but advocates adequate purges, Guelpa contends that fasting and diuresis do not expel the intestinal poisons which tend to produce auto-intoxication. He therefore concluded that purgative elimination of these poisons, and draining by osmosis of those that remained in the circulation, would largely increase the eliminating action of fasting and diuresis, and he recommended fasts of varying periods, not generally exceeding three days, with a morning dose each day of 400 g. (1¼ oz.) of sodium sulphate. Dr. Guelpa expressed his pleasure at meeting one who had come by his own experience, and without knowledge of Guelpa's methods, to very much the same conclusions, although the heroic doses just mentioned had not been adopted. Since leaving Paris I have had the opportunity of taking a steady course on these lines, fasting two days the first week, two days the second week, and two days the third, and have found that this course has been much more effective than any I have previously attempted. All sugar has disappeared and I am again returning to my usual health. Once each week I take 1¼ oz. of sulphate of sodium and fast completely for 36 hours, excepting for weak cocoa and cream. In the fourth week I fast two days.

My own personal experience may be of value, but I have no claim from general observation of a large number of patients to deal at length with this question. It was, however, of great interest to find that Dr. Guelpa—whose experience is enormous and whose methods have been so largely adopted in France—entirely corroborated my own findings. Dr. J. Laumonier, editor in chief of the *Revue de Chimiothérapie et de Médecine Générale*, in two very able

articles contributed recently to that review gave his full adhesion to Guelpa's views. This testimony is the more valuable as he was once an opponent of Guelpa. Dr. Laumonier observes—and therein I agree with him—that on the first day there may be some slight discomfort, but that on the second day of purgation and fasting all discomfort disappears, to give place to a marked feeling of well-being. Dr. Laumonier is very insistent that absolute abstinence from all solid or liquid food should be observed during the period of the fast, and this is my experience, excepting for weak cocoa, which Dr. Guelpa recommended. The treatment is drastic and should always be taken under medical direction, but according to the testimony of these French authorities no accidents have occurred in the use of this remedy.

Method of Resumption of Ordinary Diet.

At the termination of the first long fast it is important to commence with a very restricted diet—e.g., one litre of milk, or 200 g. or 300 g. of green vegetables cut up or served in soup, or 200 g. of potatoes in soup. At the end of two or three days these rations may be increased by the addition of biscuits or toasted bread, milk dishes, and one or two eggs. After eight or ten days of this light diet a return may be made to ordinary meat diet. Analysis in the case of diabetics will show whether it is necessary to revert to the fasting remedy, but in many cases a complete cure has been effected with one course of the treatment. The French school recommend that the patient will be well advised to repeat the long fast from time to time—say three or four times a year in the hot weather.

Treatment of Acidosis.

I am confident that the adoption of Guelpa's method of combining rather free purgation with fasting will prove of great benefit to patients suffering from diabetes, gout, colitis, and arthritis if the treatment be applied under medical care and direction. The importance of constant watching on the part of the medical attendant arises from the possibility of the development or increase of acidosis during the fast, as in my own case this year. In that event the fast should be discontinued when the acidosis is detected, and resumed after a few days. In the meantime, in my own case a single dose of codeia sulph. ½ gr. and urotropin 5 gr. and the reversion to food immediately stopped these symptoms. After a week of light diet the fasting can be resumed with a diminishing tendency to acidosis. I think Dr. Guelpa would have depended entirely upon a temporary return to food without any reliance on medicine. In any case, his conclusion is as stated, that the acidosis is less troublesome with each successive fast in a given course, and that the obvious benefit of each fast becomes more pronounced as the treatment is continued, within reasonable limits.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF SUPPURATIVE MONARTICULAR ARTHRITIS IN AN INFANT, DUE TO *B. PARATYPHOSUS C.*

BY ARCHIBALD LANGWILL, M.B., F.R.C.S. EDIN.,
LATE TEMPORARY HOUSE SURGEON, PADDINGTON GREEN CHILDREN'S HOSPITAL.

THE following case is published on account of its extreme rarity.

A female infant, L. R. M., aged 11 months, was admitted to the Paddington Green Children's Hospital on May 18th, 1921, on account of a marked swelling in the region of the left shoulder-joint.

History.—She had always been a healthy infant up to about the end of March, 1921, when she developed whooping-cough. On April 27th she was very feverish, and had "continuous fits" from 5.30 P.M. till 8.30 P.M. At that time it was thought she was dying. Since then there have been no further fits, and the violence and the frequency of the bouts of coughing have gradually diminished. Breast-fed entirely since birth up till a little over a week before admission, since when she had been having several feeds of cow's milk in addition to the breast. A week before admission the mother noticed that the infant seemed disinclined to move the left arm, and that there was apparently a certain amount of pain occasioned when passive movements at the shoulder-joint were attempted. Next day the left shoulder region was swollen, and this gradually increased. No history of trauma beyond the severe convulsive seizures three weeks previous to admission. No history of diarrhœa recently or of hæmorrhage from skin or mucous membranes.

Family history.—Parents both alive and healthy. Neither has suffered from any serious illness. Two sisters, aged 3 years and 2 years respectively, also healthy.

Condition on admission.—Well-nourished infant. Temperature 99° F., pulse 152, respiration 45 per minute. On examination it was found that the left shoulder-joint was obviously uniformly distended with fluid. Fluctuation well marked. No actual redness or œdema of the overlying skin. Movements at the shoulder only slightly restricted, but when carried out passively seemed to cause the infant pain.

Operation.—On May 19th, after an exploratory puncture, chloroform was administered, and I opened the left shoulder-joint by the anterior route. On incising the joint capsule, which was tightly distended, about an ounce of a thick yellow pus was allowed to escape. This was aseptically collected for bacteriological investigation. Drainage of the joint was established by inserting a small piece of india-rubber dam, and hot fomentations were applied. Since the child was suffering from whooping-cough, the mother was allowed to take her home, with instructions to put the case at once under the care of her private medical attendant.

Pathology.—I am indebted to Mr. H. W. Perkins, pathologist to the hospital, for the following bacteriological report: "A thick yellow pus, in films of which are found a few Gram-negative bacilli. A free growth of this bacillus is obtained in pure culture. The organism is actively motile; it does not liquefy gelatin. Culturally, it presents the biochemical reactions of the salmonella group. Gas production in sugar media is feeble, and the fermentation of dulcite is slow. The organism is not agglutinated by 'Oxford' specific serums for *B. paratyphosus A*, *B. paratyphosus B*, and *B. enteritidis* (Gaertner). After daily subculture for a period of two weeks its cultural and serological characters remain unaltered. The identity of this bacillus was finally established by Lieut.-Colonel H. Marrian Perry, R.A.M.C., professor of pathology at the Royal Army Medical College, who very kindly undertook the further investigation of this organism. He found that it was agglutinated by his paratyphoid C serum to its full titre (1–5000)."

Remarks.

It is needless to emphasise the value of the notes of this case, when it is recollected that, in the first place, the recovery of *B. paratyphosus C* from even the stools or the blood is a very rare event, and in the second place, its recovery in pure culture from a suppurating joint—and this apparently as a de novo infection—must be almost unique. It is, of course, impossible to say where and when the causal organism gained its entrance to the blood stream, but might it not be permissible to assume some such relation as cause and effect between the change from feeding entirely at the breast to partial artificial feeding, and the joint infection very soon afterwards? The possibility of *B. paratyphosus C* having been "imported" by the father—as a "carrier"—from one of the theatres of war was considered, but on inquiry it was found that he had neither been abroad nor ever suffered from symptoms to suggest an infection by one of the enteric group of organisms. I may add that I have followed up the case, and have heard quite recently from the mother that the child is now in good health. The wound continued to discharge freely for about ten days, after which the amount of discharge rapidly diminished. The wound closed completely five weeks after the operation. According to the mother, not the slightest impairment of function of the affected joint remains.

I wish to express my indebtedness to Mr. D. C. L. Fitzwilliams, to whose ward in the hospital the child was admitted, for kindly granting me permission to publish these notes.

A CASE OF
STRANGULATED OBTURATOR HERNIA.

BY A. ERNEST SAWDAY, M.B., B.S. LOND., M.R.C.S.

THE following case is particularly interesting in that it illustrates the common reluctance to diagnose a rare condition even in the presence of signs and symptoms which are strongly suggestive.

Mrs. K., aged 69, when first seen had been suffering from abdominal pain for four days. For the past three days there had been increasingly severe vomiting. The tongue was coated and the bowels had not been open for two days. An enema produced a fair result, but did not relieve the symptoms. The pain was ascribed to the lower abdomen and particularly to the left femoral region.

History.—Fifteen years ago pelvic colon resected for carcinoma. A few years later an operation for strangulated right inguinal hernia.

Examination.—Abdomen somewhat distended, but nothing palpable. Left femoral region somewhat tender on pressure. Tissues there appeared a trifle more resistant on palpation than at the corresponding point on the other side. Rectal examination negative. The possibility of an obturator hernia was considered, only to be dismissed in favour of obstruction by a recurrence of growth.

Operation.—On opening the abdomen turbid fluid escaped, and the apex of a loop of the lower ileum was felt passing through the left obturator foramen. This loop was very tightly nipped, but after some manipulation it was withdrawn into the abdomen. It was found to be a Richter's hernia involving nearly the whole circumference of the bowel, and a large patch on the anti-mesenteric border of the gut was quite gangrenous. Some six inches of ileum were resected and a side-to-side anastomosis performed. The patient did well for some days and the bowels were well opened on several occasions, but at the end of a week hypostatic pneumonia set in and she died two days later.

This case is typical of the text-book description of strangulated obturator hernia, which most frequently occurs in old ladies; the classical signs and symptoms of acute obstruction are accompanied by pain, slight tenderness, and resistance in the region of the femoral sheath.

Derby.

A CASE OF
DISCHARGE FROM THE UMBILICUS.

BY FREDK. JOHNSON, M.B. LOND., F.R.C.S. ENG.

THE following case is uncommon and merits record.

H. C., a railway plate-layer, presented himself complaining of a discharge from the navel of some two weeks' duration, accompanied with pain below and to the right of the spot. The patient was of a strong and robust build, and there were no symptoms referable to the intra-abdominal organs. By manipulation a clear and scanty serous discharge could be expressed from the umbilicus. An induration with a fairly well-defined margin, rather larger than a half-crown piece and somewhat tender, was detected below and to the right of the umbilicus. The induration was situated apparently in the muscular wall rather than in the skin or subcutaneous tissues.

The patient's general condition suggested nothing of an acute nature. He was taking holiday and wished to return to work after a few days. A soothing warm application was prescribed, and two days later the patient returned with the story that a hay or grass seed had been passed with the discharge. This statement at once afforded a clue to the case. I examined the navel more minutely and found a fine track leading in the direction of the induration. An ordinary director was passed into the sinus; on its withdrawal the groove of the instrument was found to contain a thick cheesy offensive material with which were mixed the sheath remnants of grass seeds. The patient volunteered the statement that he had been engaged during the summer in removing hay from a railway cutting. The subsequent course of the case revealed nothing noteworthy; more grass-seed débris escaped and the discharge gradually subsided and with it the swelling below the umbilicus.

It was clear that several dried grass seeds with their cuticular coverings had become imbedded in the folds of the umbilicus and, aided possibly by the barb-like character of the seed covering and the contractions of the subjacent muscles, had penetrated the surface layers of the abdominal wall.

Southborough, Kent.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SYPHILIS OF THE STOMACH.

AN occasional lecture on Syphilis of the Stomach was delivered on Nov. 23rd by Dr. GUSTAVE MONOD, physician to Vichy Thermal Hospital, Sir JOHN BLAND-SUTTON, President of the Society, being in the chair.

Dr. MONOD said that the question of syphilis of the stomach was of great interest, as the treatment and life of the patient depended on correct diagnosis. As early as 1834 Prof. Andral (Paris) taught the occurrence of this condition, and cases were recorded by Dieulafoy, Hayem, Fournier, and Pater (Paris 1907). At the present time with the more accurate means of diagnosis, numerous cases had been described by Smithies, Hemmeter (U.S.A.), Chiari (Germany), Hayem, Leven, Bensaude, and Florand (France). Among the few British authors who had mentioned this disease were Soltau Fenwick[1] and McDonagh.[2] Syphilis of the stomach might exhibit itself by sclerosis, gummata, or submucous infiltration. An excellent specimen of this third condition, showing the spirochætes in situ, was being demonstrated by McNee.

The *frequency* of this condition varied greatly according to the various authorities, but Dr. Monod thought that the figures were increasing. The English records were surprisingly low compared with the French and American ones. He wondered if this was due to the prevalence of syphilis in France. Or might it be that syphilis was diagnosed earlier in England and treated, thereby preventing complications such as that which he was now discussing?

The *clinical types* of syphilis of the stomach might be summarised as follows:—

(*a*) Neuralgic or chronic dyspeptic.

(*b*) Ulcer. A case was described by Prof. Fournier in which gastrorrhagia was stopped by treatment with potassium iodide. Soltau Fenwick said that 5 per cent. of gastric ulcers are specific, while other authorities said 10 per cent. (Engel) and 20 per cent. (Lang). A report at the last international congress of medicine in Strasbourg estimated 100 per cent! During the war Castaigne found eight positive Wassermann reactions amongst 40 cases of gastric ulcer in soldiers, and four of these were cured by antisyphilitic treatment. The ulcer might be due to thrombosis, to the breaking down of a gumma, or to gastro-radiculitis.

(*c*) Pseudo-cancer. Many cases in which syphilis had mimicked carcinoma were now on record. Hayem had reported a case in which a pyloric tumour in a man, aged 71, disappeared under antisyphilitic treatment. The same author also recorded the case of a man, aged 60, suffering from vomiting, cachexia, and hypoacidity, on whom he performed pylorectomy under the impression that the condition was cancerous. The patient recovered and remained well. Examination of the excised pylorus revealed only syphilitic infiltration. The question arose, would anti-syphilitic treatment have been as effectual? This question might be answered by the experience of Tuffier, who operated on a man, aged 35 years, for a supposed hydatid cyst of the liver. Operation revealed a large gumma and was not proceeded with. Anti-syphilitic treatment was given, but in spite of this stenosis of the pylorus developed for which gastro-enterostomy had to be performed later. The second operation revealed a pylorus encircled by dense syphilitic scar tissue. Florand reported a similar case: pain after meals, vomiting, and loss of weight accompanied by a palpable tumour led to a diagnosis of cancer. Operation in this case revealed a syphiloma of the left lobe of the liver extending to the pylorus. Gastro-gastrostomy, followed by anti-syphilitic treatment, resulted in a cure. Lemierre and Roulot-Lapointe had recorded a

[1] THE LANCET, 1899, ii., 410. [2] Venereal Diseases, 1920.

case of undoubted syphilis of the stomach in which the only symptom had been a sudden hæmatemesis.

(*d*) Stenosis. One case had already been quoted of pyloric stenosis. Mid gastric stenosis producing hour-glass stomach had been reported by Bensaude. This patient, who had lost 20 lb. within two months, recovered under treatment and even the biloculation disappeared. Stenosis of the cardia occurred in a case of Enriquez and Bensaude. There was no history of syphilis in this case—that of a woman, aged 35 years. Gastralgia, constant vomiting, and the loss of 80 lb. weight within 18 months, led to a screen examination which revealed a double stenosis occurring in the cardia and mesogastrium. Under specific treatment she gained 30 lb., but six months later began to lose weight again. Screening on this occasion showed no loculation of the stomach, but that the pylorus was incompetent and the duodenum greatly enlarged. The condition had then become one of the next type.

(*e*) Linitis. The example just quoted was the only one described by Dr. Monod.

(*f*) Tabes. This came within the scope of the paper only when there was a definite lesion of the stomach associated with tabetic crises.

Hereditary syphilis.—All the types described above might occur in hereditary syphilis. In children there were two special types, the symptoms of which were: (*a*) gastric hæmorrhage in the new-born; (*b*) chronic vomiting without acetonæmia.

Diagnosis.—This resolved itself into two questions, Was the stomach at fault? and Was the lesion syphilitic? In the elucidation of the latter question, the Wassermann reaction was helpful, and Dr. Monod had found Stern's reaction valuable: screen examination often revealed a characteristic picture. Where a portion of the stomach had been excised the presence of spirochætes could be demonstrated in definitely syphilitic lesions.

The action of potassium iodide provided a very useful test. In syphilis of the stomach the organ seemed to crave for potassium iodide, and rapid improvement usually occurred, whereas with other dyspepsias the drug aggravated the symptoms. There were, however, cases in which spontaneous cure occurred, and others where specific treatment was ineffectual.

The *treatment* he advised was the use of mercury, potassium iodide, and salvarsan, combined sometimes with tartro-bismuthate of potassium. The best treatment could only be settled by further experiment and experience. Surgical intervention was called for in certain cases, where there had been scar-tissue formation.

In conclusion, Dr. Monod said that while it could not be accepted that all cases of stomach derangement cured by specific treatment were definitely syphilitic, we should not forget that a number of otherwise uncontrollable dyspepsias were amenable to anti-syphilitic treatment.

Discussion.

Dr. J. W. MCNEE said that he could add little to the clinical side of the subject, but would describe an unique example of syphilis of the stomach, which had been admitted to the wards of Dr. Sidney Martin, F.R.S., in University College Hospital. The patient was a man of 57 years, who had suffered from pain in the chest and abdomen of six months' duration. A provisional diagnosis of carcinoma of the stomach was made for the following reasons: there was a palpable mass in the epigastrium; free hydrochloric acid was absent in the gastric contents, while lactic acid was present. The Wassermann reaction was not carried out. Sudden perforation occurred shortly after admission and rapid death ensued from peritonitis. At the autopsy a large ulcer was found occupying three-fifths of the wall of the stomach, the only parts of the organ remaining free from ulceration being close to the cardiac end and close to the pylorus. The wall of the stomach in relation to the ulcerated area was greatly thickened, the thickness in parts reaching a diameter of three-quarters of an inch. Microscopically the condition closely resembled a scirrhous carcinoma, but it was noticed at the time that no secondary growths were present in the liver or neighbouring organs, and the lymphatic glands in the neighbourhood of the stomach were also free from metastases. On this account careful histological examination of the ulcerated area was carried out. In sections a condition strongly suggestive of syphilitic infection was made out, there being well-marked endarteritis obliterans of small arteries, and extensive round-celled infiltration along the vascular capillaries. In other places where the lesion appeared to be more acute abundant granulation tissue of a peculiar type, and of very active growth, was observed. A number of blocks of tissue taken from different parts of the ulcerated area were stained by Levaditi's silver method for the demonstration of spirochætes. In one block of tissue taken from an acute granulomatous area abundant spirochætes were found, morphologically identical with the *Sp. pallida*, having 8–14 regular curves. Dr. McNee exhibited the actual stomach, with microscopic and lantern slides demonstrating the various lesions and the spirochætes. This specimen appeared to be unique from the fact that the diagnosis was made by the discovery of the spirochætes. No signs of syphilis were found in any of the other organs.

Dr. A. F. HURST said that his experience of syphilis of the stomach was very limited, and he had only seen two definite cases, one of a gumma simulating carcinoma, the other being a syphilitic ulcer which simulated an ordinary duodenal ulcer. He had had the Wassermann reaction tested in at least 100 cases, when the diagnosis of syphilis was remotely possible. Nevertheless, the remarkable results of antisyphilitic treatment in the two cases to be described suggested that the Wassermann reaction should be tested in all doubtful gastric cases.

1. *Syphilis of the Stomach with Achylia simulating Duodenal Ulcer.*—The patient, a man aged 51 years, had had dyspepsia for 20 years with a five year remission. The symptoms were strongly suggestive of duodenal ulcer, pain three hours after food, waking him in the night, and relieved by a meal. A strict course of medical treatment, rest in bed, diet, and alkalies failed to improve him, and he was then sent to Dr. Hurst, who found almost complete achylia with an atonic stomach instead of the hyperchlorhydria and hypertonus typical of duodenal ulcer. The fasting gastric contents contained large numbers of leucocytes, and the stools occult blood. There was no history of syphilis, but a Wassermann reaction proved strongly positive, and a single injection of salvarsan resulted in so great an improvement that he refused further injections. He took an acid and pepsin mixture for some months, but had since had two further injections of salvarsan, and now appeared completely cured of symptoms, although the Wassermann reaction was still slightly positive.

2. *Gumma of the Stomach causing Pyloric Obstruction.*—This patient, a man aged 33 years, had syphilis in 1901. Eight years later he began to suffer from indigestion; his appendix was removed with only temporary relief. In 1911 he had pain in the right hypochondrium relieved by vomiting, with flatulence, wasting, and constipation. An X ray of the stomach revealed considerable delay supposed to have been due to a duodeno-jejunal kink. The following year X ray examination showed obliteration of the normal gastric outline in the pyloric half of the stomach. Mr. Peter Daniel operated and found a rigid pylorus without definite ulceration for which he performed a gastro-enterostomy with temporary improvement. Symptoms returned within a year, and on being called in consultation Dr. Hurst advised a Wassermann reaction, which proved positive. Three injections of neo-salvarsan proved completely curative of symptoms.

Mr. A. J. WALTON agreed that the frequency of syphilis of the stomach had been estimated variously by different observers. His experience of surgical gastric disease included 264 of gastric ulcer, 125 of duodenal ulcer, 125 of gastric carcinoma, 1 of sarcoma, and 1

of leather-bottle stomach. Whenever possible microscopic examination of excised portions had been made, but the Wassermann reaction had not been carried out as a routine.

Linitis Plastica.—In his own series there was only one case of leather-bottle stomach, too extensive for gastrectomy. Post-mortem investigation showed this to be a case of carcinoma, and the London Hospital had found no example of the syphilitic variety of linitis plastica.

Carcinoma of the Stomach.—It was well known that syphilis occasionally produced a tumour very like an early cancer. Bird believed that syphilis was to be suspected if the tumour was succulent looking and almost opalescent, and if the omentum showed white unexplained scars. Some of the cases of supposed carcinoma too extensive for gastrectomy, which recovered completely after gastro-enterostomy or even without any interference, might have been syphilitic, and he (Mr. Walton) had met with three such cases where the operation had been performed by another surgeon. Among his gastrectomies there was no evidence of syphilis on microscopic examination.

Chronic Gastric Ulcer.—The majority of reported cases of syphilis of the stomach resembled chronic gastric ulcer. In the London Hospital Pathological Institute only one case of a syphilitic lesion of the stomach had been demonstrated at over 12,000 post-mortems. He thought it probable that the variation in the figures might be due to the fact that some of the ulcers occurring in syphilitics were not in themselves specific but simple peptic ulcers. It should be remembered that a positive Wassermann reaction was not definite evidence that the lesion in the stomach was syphilitic. The appearances of a syphilitic ulcer were said to be as follows: they were deep with much surrounding infiltration, often causing much distortion of the stomach; perigastric adhesions were common, and widespread scarring occasionally caused obstruction necessitating operation.

As regards symptoms, the general health appeared to suffer considerably and loss of weight was marked. Hæmorrhage occurred just as in the cases of chronic ulcer. According to Downes, free acid tended to be diminished. In his (Mr. Walton's) experience syphilitic lesions of the stomach were rare.

The Histological Diagnosis of Syphilis.

Prof. H. M. TURNBULL said that the histological diagnosis of syphilis was even more difficult in the stomach than in any other organ. If the changes typical of syphilis elsewhere—namely, infiltration with plasma cells, lymphocytes and eosinophils, endarteritis and endophlebitis, and the presence of multinucleated giant cells—were to be accepted as evidence of a syphilitic origin of a gastric ulcer, then all, or almost all, chronic peptic ulcers would have to be classed as syphilitic. There was definite evidence, however, against such an extreme view, and Prof. Turnbull thought, in view of Dr. McNee's success in demonstrating the *Spirochæta pallida*, that this would provide the only positive evidence of the syphilitic origin of any gastric lesion. At the Pathological Institute of the London Hospital they had examined portions of 713 stomachs from the operating theatre without finding any evidence of syphilis. Syphilis of the stomach was undoubtedly very rare; in 13,000 post-mortems at the hospital one doubtful case only had been found, although they had constantly been on the look-out for it. A few apparently typical "gummatous ulcers" of the stomach proved on histological examination to be chronic peptic ulcers with a growth of a Gram-positive streptothrix in their bases. The one doubtful case was that of a female patient, aged 30, who died after a miscarriage at the sixth month, which had been preceded for three days by profuse hæmatemesis. Post mortem abundant evidence of syphilis was obtained in the aorta, the scarring of the soft palate, vaginal orifice, &c., and the positive W.R. of the blood. There were a number of enlarged fibro-caseous glands in relation to the bronchi and trachea, and an enlarged upper lumbar gland on each side. A large irregular ulcer involving the posterior surface of the body and fundus of the stomach, with a granular yellowish-grey base surrounded by a raised border honeycombed with small ulcers, showed on histological examination changes typical of intense gummatous inflammation. Gummata were found in the liver. This case was still under investigation and Prof. Turnbull thought it doubtful, since the distribution of the glandular enlargement was typical of tuberculosis spreading from the hilum of the left lung, and because he had not found spirochætes on microscopical examination of no less than 14 different portions of the stomach stained by Levaditi's method.

SECTION OF UROLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 24th, Sir THOMAS HORDER, the President, being in the chair.

Mr. JOHN EVERIDGE opened a discussion on

RENAL FUNCTION TESTS.

He said that the tests chiefly employed by himself were (1) dye-excretion; (2) forced urea-excretion; (3) urea-retention (blood-urea). About 600 cases, mostly surgical, had been investigated by him.

Dye-Excretion.

Two dyes had been employed, phenolphthalein and indigo-carmine. By the former, quantitative, and by the latter qualitative estimation of the renal function was attempted. Indigo-carmine was employed to give an estimate of the relative working of each kidney. By its use the frequency of jets from the ureters as seen with the cystoscope was made obvious and a hidden ureter easily discovered. Phenolphthalein, in the opinion of Mr. Everidge, could not be relied on to give a very accurate estimate of the total renal function. He had found it give only 66 per cent. of accurate results when used as a preliminary investigation before operation (chiefly prostatectomy) on the lower urinary tract. In one case where colour came through in five minutes, and 36 per cent. of the dye was excreted in the first hour, the patient died after the second stage of a two-stage prostatectomy; post mortem very little renal tissue was present. When used as a test of relative kidney value, phenolphthalein gave about 54 per cent. of results which were thought to be accurate since they coincided with those obtained by alternative tests and from the clinical phenomena. In many cases the test gave a doubtful result and in 15 per cent. the results were quite misleading.

One case, a female, who had suffered for five years from symptoms suggestive of a right-sided intermittent hydronephrosis, gave the following results after the injection of 6 mg. of phenolphthalein and catheterisation of the ureters. From the right kidney the colour came through in ten minutes, while none appeared from the left kidney in half an hour. Pyelography immediately after revealed no abnormality on the left side, while the right presented a definite piecture of hydronephrosis. Mr. Everidge showed radiograms of this case. Subsequent operation revealed stenosis of the upper end of the right ureter, and the patient made an excellent recovery in spite of the apparently low efficiency of the left kidney as estimated by the phenolphthalein test.

Mr. Everidge added that the personal equation entered largely into the reading of any dye test, and that his personal reading might be open to criticism. The presence of blood or other pigments in excess in the urine obviously vitiated this test.

Urea-Concentration Test.

Although at first somewhat sceptical that so simple a test could be efficient, Mr. Everidge had found this test demonstrate increasing or decreasing renal efficiency with remarkable accuracy. Certain precautions had, however, to be taken, and of these a 12 hours' abstention from food and drink before the test was essential. In certain cases with a high "pressure head" of urea in the blood, urea appeared to be forced through the kidney as MacLean had suggested.

[1] THE LANCET, June 19th, 1920.

Hence arose the necessity of a simultaneous blood-urea estimation. This class of case gave a better operation risk than would be imagined from examination of the blood-urea alone. Thus in one of Mr. Everidge's recent prostatectomies, where the blood-urea was 57 and the urea-concentration 1·93 per cent., rapid convalescence without any symptom of uræmia occurred. In another case where the blood-urea was 131, but the urea-concentration was 2·14 per cent. suprapubic lithotomy had been performed with a good result. Amongst cases where the urea-concentration did not exceed 1·5 per cent. while the blood-urea figure fell within normal limits, there was no single instance of recovery after prostatectomy. The deaths were not all due to uræmia. As regards the technique of the test, Mr. Everidge withheld all fluids for 12 hours beforehand and gave half a pint of water immediately after the draught of urea-solution. Since the highest concentrations of urea in the urine had been found in many cases to occur in the third hour, it was now his custom to collect specimens of urine at the end of each of the three hours after the meal. This procedure also overcame the difficulties caused by the diuresis promoted by the urea, which, as a rule, had passed off by the third hour. It was unfortunate that the test could not be carried out in many cases complicated by digestive disturbance, as the meal was vomited; nor could it be accurately applied where suprapubic drainage had been established. An interesting point was that the urea-concentration generally rose temporarily after nephrectomy.

Blood-Urea Estimation.

The blood-urea figure was variable through wide limits in the same individual according to diet, and a single estimation might be most misleading. His attention had been drawn to this by noting the marked increment in the blood-urea during the few hours after the urea meal was administered for the urea-concentration test; this occurred during health and disease. In Mr. Everidge's experience blood-urea estimation fulfilled two important rôles: (1) an adjunct to the urea-concentration test (by eliminating an abnormally high "pressure head" of blood-urea which may be causing a high urine urea). (2) In distinguishing uræmia from other diseases clinically indistinguishable therefrom.

Results of Application of Urea-Concentration Tests.

Mr. SWIFT JOLY gave the results of the urea-concentration test as applied at St. Peter's Hospital to 64 cases of enlarged prostate. Of 23 cases where the urea concentration exceeded 2 per cent., 21 had been operated upon with two deaths. Of 14 cases with urea-concentration between 1·5 per cent. and 2 per cent. there was one death after operation. Of 13 cases in which the urea-concentration lay between 1·0 per cent. and 1·5 per cent. only five had been submitted to operation and one of these died; while four cases with a urea-concentration of less than 1 per cent. had been operated on without any death. The deaths in the first class of case (i.e., those with a urea-concentration exceeding 2 per cent.) were not due to renal deficiency. On the whole, therefore, this test yielded some indication as to the advisability of operation. In many cases, however, a low urea-concentration was accompanied by a large diuresis, so that Mr. Joly was inclined to think that the total quantity of urea excreted during the second hour of the test gave a more accurate indication of the renal efficiency. Certain precautions were always taken at St. Peter's Hospital. Every patient was kept in hospital for 24 hours on a standard diet before the test. As regards cases where nephrectomy or any unilateral kidney operation was proposed, the test could be applied to the urines from each kidney obtained by ureteral catheterisation. In cases of unilateral kidney disease, such as aseptic stone, hydronephrosis and other conditions, the urine from the healthy kidney always showed a higher urea-concentration than that from the affected side, and was not infrequently as high as 3 per cent.

Renal Function Tests in Surgical Cases.

Mr. FRANK KIDD said that there were two distinct classes of surgical cases in which renal function tests were applied: those in which the renal function as a whole needed investigation (for example, before prostatectomy) and those where the function of one kidney needed investigation before the other kidney was removed for disease. Mr. Kidd had employed at various times simple excretion tests, excretion tests combined with stimulation, retention tests (blood-urea), and the hæmo-renal index. As the result of his experience he preferred the following tests: (1) a dye test (indigo or phthalein); (2) the blood-urea test; (3) the hæmo-renal index.

Where prostatectomy was under consideration there was obviously no need to separate the urines, as only the effect of back pressure on the secreting substance of the kidney need be considered. When the renal efficiency tests indicated poor efficiency, Mr. Kidd performed a two-stage operation, and he considered that this involved less risk to the patient than catheter life. In performing the various tests he avoided the use of the catheter, which was undoubtedly dangerous; if urine could not be obtained by ordinary means he preferred the use of Pezzer's tube introduced suprapubically, as this involved less danger of infection. As regards the interval between the two stages of the operation, he thought it wiser to err on the side of waiting too long. Before nephrectomy the problem was different. Here, again, Mr. Kidd was averse to the utilisation of any test that necessitated prolonged catheterisation of the ureters for two reasons: (1) the danger of sepsis, and (2) because the introduction of the ureteral catheter reflexly affects the rate of secretion from the kidney. Quantitative tests applied to urine obtained were thus fallacious and the prolonged indwelling of a catheter inevitably produced ureteritis. In these cases Mr. Kidd relied upon a dye test combined with the hæmo-renal index, as estimated by the electrical conductivity of a drop of blood and of a single drop of urine from each ureteral catheter. He was inclined to think that the percentage of urea was a more valuable indication of the renal condition than the total amount of urea excreted. Mr. Kidd said that the colour test which he advocated had the immense advantage of being easily applicable at the patient's bedside. He did not advocate the above tests for the investigation of medical cases; for these the blood pressure, combined with ordinary clinical examination of the urine, supplied a more reliable indication of the efficiency of the kidneys.

The Need for Simple Tests.

Prof. H. MACLEAN said that renal efficiency tests must be simple if they were to be of any material help to the surgeon. By laboratory investigations it was possible to estimate the renal efficiency of any case, but the three tests advocated by him were easily applied, without complicated apparatus and without even putting the patient to bed. Prof. MacLean and his co-workers had applied the tests now on more than 15,000 occasions, and had found them efficient. The tests were (1) the blood-urea; (2) the urea-concentration; (3) the urea-concentration factor.

The Blood-Urea Test.—In interpreting this test the previous diet of the patient was most important. It was also found that the blood-urea normally increased with advancing age. Prof. MacLean emphasised that uræmia as a clinical condition had nothing to do with the urea content of the blood, and instanced a case where a patient, with a high blood-urea figure and clinical signs of uræmia, died of uræmia, in spite of the fact that the blood-urea was brought down to the normal figure by a carbohydrate diet.

Urea-Concentration.—In the interpretation of the urea-concentration figure, the amount of blood-urea and the question of diuresis had to be considered, but in general it could be stated that a urea concentration of 2·5 to 3 per cent. after the urea meal indicated efficient kidneys, while a figure of 2·0 to 2·5 per cent. indicated "good average" kidneys unless the blood-urea figure was very high. When the urea-concentration was less than 1·5 per cent. the kidneys were inefficient unless this low figure was due to profuse diuresis. In the latter event

Prof. MacLean advocated repeating the test immediately by giving a further 15 g. of urea. The initial diuresis usually disappeared after the second meal, and the figure then obtained would be reliable.

The Urea-Concentration Factor.—This was the fraction :—

$$\frac{\text{Number of mg. of urea in 100 c.cm. of urine}}{\text{Number of mg. of urea in 100 c.cm. of blood}}$$

and represented the power of the kidney to concentrate the waste products from the blood. The normal figure for the factor was 60 to 80. When the factor was about 40 the outlook for any surgical operation was poor, and with a factor of 20 almost hopeless. By the consideration of the three tests he had found no difficulty in prognosticating the risk of major surgery on the urinary apparatus, but he wished to emphasise the fact that results depended not altogether on renal efficiency but also on the rapidity and dexterity of the surgeon.

Certain Fallacies and Corrections.

Mr. CYRIL A. R. NITCH said that Prof. MacLean had elaborated a technique which was so simple in application and so simple to understand that with a knowledge of the different normals the surgeon required very little experience to form a good working conception of renal efficiency or deficiency. Mr. Nitch had employed the following tests during the last three years: (1) the percentage of urea in total amount of urine passed in 24 hours by a patient on a normal hospital diet ; (2) the urea concentration in second and third hour specimens after a dose of 15 g. of urea ; (3) the blood urea-concentration ; (4) the clinical signs of renal functions, such as the degree of thirst, the appetite, particularly for meat the condition of the tongue, and the colour of the skin. Any single test might be misleading, but when all these were taken together a very reliable indication of the condition of the kidneys was obtained. In fact, he had recently shown Prof. MacLean a tabular statement of over 100 cases subjected to operation, and after reading the results of the tests Prof. MacLean had given a forecast in every case. There were, however, certain fallacies :—

1. The percentage of urea in 24 hours was normally about 1·5 per cent. in hospital patients, but the figure depended entirely on the diet, and would naturally be higher on a diet containing an unusual amount of proteins.
2. The urea-concentration test might be modified by diuresis, as already pointed out by previous speakers.
3. The amount of urea in the blood on an ordinary hospital diet was normally 20–40 mg. of urea per 100 c.cm. of blood, but the amount was subject to some variation according to the amount of protein in the diet. Prof. MacLean had already pointed out that it was useless to attempt to prevent uræmia by confining a patient to a carbohydrate diet.
4. The clinical signs were, in Mr. Nitch's opinion, the most valuable of all, and when a patient exhibited a typical clay-coloured complexion, a beefy tongue, and complained of thirst or a disinclination for meat, he would not allow any chemical test to influence him in favour of operation. On the other hand, if the clinical signs were good, while the chemical tests were below standard, he would be guided by the clinical signs. Mr. Nitch instanced a case where prostatectomy had been performed successfully, although the chemical tests were bad, while the patient's general condition would seem to indicate fair renal efficiency.

He added that the diastase test had been performed as a routine in all his cases, but that the results had been so variable that he had ceased to place any reliance on it.

Mr. Nitch's conclusions, based on a series of 118 cases comprising urethral strictures, lithiasis, diseases and neoplasms of prostate, bladder, and kidneys, were that the three tests mentioned were simple and efficient ; they were harmless to the patient, and could be applied to every variety of urinary disease ; they gave more accurate information than any others at present in use ; and that the clinical signs of renal function were of great importance and should never be overlooked.

Renal Function as a Unit.

Mr. J. B. MACALPINE referred to the different points of view from which physicians regarded this subject, and the numerous tests which they had invented with the object of differentiating the various non-suppurative inflammations of the kidney. Much of the work of the physician had a histological basis, but in the surgical field the kidney function was to be regarded as a unit, and the tests applied were designed to supply indications in prognosis and treatment. Mr. Macapline discussed two tests : the phenolsulphonephthalein test and the blood-urea test. This former test represented the kidney function in excreting urea and similar substances, the excretion of phenolsulphonephthalein being comparable with that of several substances, amongst them urea. On the other hand, the amount of blood-urea indicated the "head" of urea necessary before which it could be expelled through the kidney. The two tests should, and did, as a rule in actual practice, show parallel results. It was, however, well known that the normal human being had approximately three times the amount of renal tissue necessary for existence, and that signs of renal failure only set in when about two-thirds of the kidney tissue had been destroyed. But when the activity of the kidney was limited by disease then the organ had to work more and more continuously in order to meet the requirements of the body. Toxic products only appear in the blood when the whole of the safety margin of renal tissue had been destroyed. Renal degeneration had therefore advanced a long way before the blood-urea test gave any definite indication. The phenolsulphonephthalein test gave earlier indications of renal degeneration, although, as already stated, the indications by the two tests ran practically parallel.

Mr. Macalpine thought that these artificial tests were more variable in prostatic disease than an examination of the symptoms. He believed that the effect of the tests had been to widen out the rungs of the uræmic ladder so as to make it possible to observe more clearly the position occupied by any one patient in the scale. Further, he thought it possible to mark out arbitrary figures on the scale indicating : (1) the upper limit of the normal variation for blood-urea ; (2) a line below which a one-stage operation might be safely done and above which a two-stage prostatectomy was advisable ; and (3) a line which would lie at the entrance to the danger zone. He assumed that 40 mg. per 100 c.cm. represented the upper limit of blood-urea in healthy people. He regarded 50 mg. as the limit for one-stage prostatectomies and 75 or 80 mg. as the level at which the prognosis should be guarded. After urinary decompression operation the activity of the kidney was still further depressed and blood-urea figures naturally increased. After this preliminary depression a reaction or positive phase occurred and an adequate study of the blood-urea curve at this period was of the greatest importance. Nothing could be more haphazard than to submit a patient to the second stage of operation until it was known that the blood-urea had fallen to normal. Further, an immediate post-operative fall in the blood-urea should not tempt one to proceed with the second stage until it was certain that the fall was not due to the post-operative restriction of urea-forming bodies in the diet. Renal fibrosis might result from back pressure, but might also arise from sclerotic lesions of cardio-vascular origin. The fall of blood-urea after decompression was liable to be very slow when fibrosis was due to the latter cause. Mr. Macalpine had on one occasion waited as long as five months before performing a successful prostatectomy.

In cases where it was desirable to avoid operative interference, systematic readings of the blood-urea should be made to see to what extent, if any, the kidney was deteriorating. In such cases, the phenolsulphonephthalein test should be avoided since it involved the use of the catheter with the attendant risk of sepsis. In that type of renal tubercle, with extension to the bladder, rendering ureteral catheterisation impossible, Mr. Macalpine regarded the blood-urea test as the most satisfactory means of estimating the efficiency of the second kidney.

A New Test.

Dr. R. L. MACKENZIE WALLIS said he had had experience of several of the tests already described. He wished, however, to speak mostly about a new test

which he had recently discovered, while working on tests of pancreatic function. He had discovered that the kidney acted as a safety valve to the blood-sugar and that the urine normally contained the same concentration of sugar as the blood. In renal disease this correspondence no longer held, and the blood not infrequently contained three times as much sugar as the urine. The fraction $\frac{\text{blood-sugar}}{\text{urine-sugar}}$ therefore gave an indication of the renal efficiency. The test could be applied to a very small quantity of urine or blood, ½ c.cm. of either being sufficient. It was therefore particularly valuable when applied to the small quantities of urine obtained by ureteral catheterisation, and would in these circumstances give an indication of the functional activity of either kidney. By the employment of this test Dr. Wallis had been able on one occasion to indicate disease in one kidney when all other tests had given no indication of total renal inadequacy, and there were no clinical signs of renal disease. It was subsequently discovered that the kidney was the seat of a hypernephroma.

The Doubtful Adequacy of Pathological Tests.

Mr. GIRLING BALL said that during the past year the renal function tests he had employed were (1) the urea-concentration test; (2) the estimation of the urinary diastase; (3) the estimation of the blood-urea. In addition to these in some cases estimation of the normal urinary sugar had been carried out. From a review of the results, it became obvious that the clinical findings should always hold the first place in the judgment of the surgeon. In the majority of his cases the clinical findings and pathological tests agreed closely, but the one or two exceptions made him sceptical of the value of any pathological test.

Mr. Ball's cases were divided into two groups: (1) those of obstruction in the lower urinary passages, and (2) those of ureteric or renal disease. In the first group there were 12 cases of prostatic enlargement, two of them carcinomatous, which were not submitted to prostatectomy. Of the remaining ten four died, two from pulmonary embolism and two from renal suppuration. One of the patients who died of pulmonary embolism had only had the first stage of a two-stage operation performed, in recognition of the fact that he had had chronic obstruction and that his urine was of persistently low specific gravity, and despite the fact that the renal function tests were normal. Unfortunately, a post-mortem could not be obtained, so that it was possible that the diagnosis of pulmonary embolism was incorrect. After the suprapubic drainage he had developed symptoms suggestive of uræmia, but at no time was there any suppression of urine.

In the second group were 17 cases of ureteric and renal disease. In three of them both kidneys were diseased. When the disease was unilateral, Mr. Ball believed that if the combined excretion from both kidneys gave normal figures and the clinical findings showed that there was another kidney secreting urine normal to ordinary urinary analysis, the diseased kidney could be safely removed. The difficulties of obtaining urine from each of the two kidneys in such a manner as to make chemical examination satisfactory were great. The urinary sugar and urea tests had, however, confirmed the clinical findings, and were important as they could be carried out with small amounts of urine.

The Points of View of Physician and Surgeon.

The attitude of the physician and of the surgeon towards these tests appeared to Mr. Ball to be quite different. The former wanted to know the functioning power of the kidney from the point of view of prognosis, while the latter wanted an opinion as to whether he should perform an operation in the most adequate fashion, a modified operation, or whether he should operate at all. The surgeon wanted the test that would indicate the amount of renal reserve, and no such test had yet been invented. Further, the tests were all made under the best conditions with the patient in bed and the kidneys being called upon to do a minimum of work. It was well known that a man could exist with one kidney, and that he would stand the operation of nephrectomy provided the second kidney was sound, and it had been his practice to rely on clinical investigations to demonstrate the absence of disease in the supposedly sound kidney.

The discussion stood adjourned.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

EXHIBITION OF CASES AND SPECIMENS.

A LABORATORY meeting of this Society was held at the London School of Tropical Medicine, Endsleigh Gardens, on Nov. 17th, Surg.-Rear-Admiral Sir P. W. BASSETT-SMITH presiding.

Specimens were shown by Dr. W. BROUGHTON-ALCOCK, Dr. J. G. THOMSON, and Prof. R. T. LEIPER.

Major H. C. BROWN, I.M.S., demonstrated a method to facilitate the isolation of bacilli of the enteric and dysentery group in dysenteric stools. By the addition of one part of high-titre specific agglutinating serum to nine parts of saline emulsion of a small portion of fæces, sedimentation of the particular agglutinated, but still living, organisms was obtained with separation from other intestinal bacteria. Withdrawal by pipette of a droplet of the sediment and plating on MacConkey's medium secured on incubation a high proportion of colonies of the infecting organism. Culture plates were shown with controls to demonstrate the efficiency of this method as applied to the isolation of *B. paratyphosus*.

Dr. P. H. MANSON-BAHR gave an account of a case of amœbic abscess of the liver which had ruptured into the lung, and was eventually cured by large doses of ipecacuanha. Diagnosis was confirmed by the presence of cysts of *E. histolytica* in the sputum. Abundant growth of yeast fungi was obtained on cultivation from the sputum, and but for the finding of histolytica cysts might have been taken to point to a mycotic infection as the primary cause of disease.

Dr. MANSON-BAHR also showed microscopical preparations and drawings illustrating the pathology of bacillary dysentery.

Dr. G. C. LOW and Dr. ELIZABETH O'DRISCOLL showed pathological specimens: (1) From a fatal case of blackwater fever in which a positive Wassermann reaction had been obtained. Reference was made to similar instances, suggesting the possibility of a syphilitic factor in the causation of some cases of blackwater fever. (2) From a supposed case of malaria, in which malignant endocarditis and splenic infarcts were found on post-mortem examination. Other examples of the erroneous diagnosis of malaria were quoted as by no means infrequent. (3) Trypanosomes in the cerebro-spinal fluid and blood of a case with a previous history of malarial fever, in which the course of the trypanosome infection was characterised by slow cerebration, peripheral neuritis, and raised temperature.

Dr. ANDREW BALFOUR showed specimens of two poisonous sea-fish, or Laffe, from Mauritius: (1) *Ptercis volitans* (Linnæus); (2) *Synanceia brachjo*, var. *verrucosæ*. Both possessed formidable poisonous dorsal spines, the venom from which, on puncture of the skin, gave rise to severe local abscess and septicæmia, with serious symptoms of violent pain up the limb, great restlessness, and occasionally fatal results. The remedy applied by the Mauritian fishermen was claimed to be effective, but its composition was kept secret by the natives.

Mr. A. BACOT and Dr. J. A. ARKWRIGHT showed stained preparations of the various forms of *Rickettsia melophagi* found in the sheep ked—*Melophagus ovinus*.

Squadron-Leader H. E. WHITTINGHAM gave an account of cases of sand-fly fever in Malta, from

which a spironema had been isolated by blood culture on to Noguchi's medium, and the modification of blood-agar (Wenyon, v. infra) in six out of 26 patients. The blood was cultivated on the first day of fever, and controlled by ordinary broth cultures. On the sixth day of incubation the resulting growth was used for the inoculation of volunteers, including himself, who developed typical symptoms of sand-fly fever, slight elevation of temperature, malaise, aches and pains, and anorexia. The blood counts showed a well-marked leucocytosis. One case from which the spironema was obtained developed jaundice and febrile relapses on the eleventh and twenty-second days, the jaundice being possibly due to a mixed infection. A specimen of the cultivated spironema was shown by dark-ground illumination.

Dr. C. M. WENYON demonstrated a culture-medium for protozoa and other organisms, consisting of a 10 c.cm. mixture of 1 part of nutrient agar to 9 parts 0·85 per cent. saline, cooled after sterilisation to 50° C., to which were added 20 drops of blood obtained with aseptic precautions from the ear of a rabbit by the paraffin method. This medium was less complicated than Noguchi's, and had been found of practical value for the cultivation of *Leptospira hæmorrhagica*, *Leishmania donovani* and *tropica* at 24–30° C., trypanosomes and flagellate organisms such as *Embadomonas intestinalis*. Hogue's egg medium for the cultivation of *Trichomonas* and *Embadomonas* was also described.

Dr. WENYON also showed a number of mice, whose blood, as the film under the microscope demonstrated, was heavily infected three months previously with *Trypanosoma equiperdum*, the cause of the disease known as "dourine" or "mal du coit" in the horse, donkey, dog, and rabbit, but less pathogenic for rats and mice. In the mice shown the trypanosome infection had disappeared after infections of "Bayer 205," and the mice were now in perfect health.

Dr. A. C. STEVENSON demonstrated some microscopic specimens for diagnosis.

Dr. ALDO CASTELLANI and Dr. M. DOUGLAS showed cultures on glucose-maltose and glycerine, agar and carrot of a monilia fungus, *Hemispora rugosa*, isolated from the tonsils of a case of tonsillitis, which, in the light of the cultures obtained, was regarded as tonsilo-mycosis. Following inoculations of the fungus into a rabbit, the monilia was recovered from the heart's blood, spleen, liver, and kidney.

Dr. S. H. DAUKES demonstrated the collection made by Prof. Woodland of a series of Indian cobras (*Naia tripudians*), which had been preserved in formalin and showed variations in colour markings.

Dr. P. A. MAPLESTONE showed a smear stained with Leishman from an ulcerating granuloma on the inside of the cheek of a female Australian aboriginal, aged 22, showing large mononuclear cells heavily infected with organisms associated with granuloma pudendi, also free extracellular forms. The condition, very rare in the mouth, cleared up rapidly with intravenous injections of tartar emetic.

Dr. J. W. S. MACFIE and Prof. WARRINGTON YORKE showed a specimen of urine from a case of paroxysmal hæmoglobinuria indistinguishable from that passed during an attack of blackwater fever, and also specimens of blood from the same case showing autolysis. The explanation of the autolytic reaction depended on complement splitting; the reaction was not given by blood from blackwater fever patients.

Dr. MACFIE and Prof. YORKE also showed, from specimens illustrating the minute anatomy of *Oxyuris equi* (Schrank, 1788) and *Enterobius vermicularis* (Linnæus, 1758), that these belonged to quite separate type species. They exhibited also a blood film of a rat showing a small spirochæte obtained from a Gold Coast dog; the organism was regarded as identical with *Sp. laverani* (Breinl and Kinghorn, 1906).

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of this Society was held on Nov. 18th.

Respiratory Exchange in Health and Disease.

Dr. G. B. FLEMING made a communication on the Practical Application of the Determination of the Respiratory Exchange in Health and Disease. He outlined what was meant by the respiratory exchange by physiologists and pathologists, and explained the principles of direct and indirect calorimetry. The latter method was the one employed in his observations, when he used a closed circuit apparatus connected with which was a movement recorder. In order to fix a standard the basal metabolism was first determined. After much work this has been fixed for adults at 28 calories per kilo per 24 hours, or 950 calories per square metre of body surface per 24 hours. The difficulty in the case of infants was very great; the figures for very young children might not be strictly accurate, but were near enough for practical purposes. Dr. Fleming showed tables illustrating the basal metabolism at various ages and the influence of various factors thereon. In considering the practical application of this work, Dr. Fleming referred to Cathcart's studies of food requirements in the recruit undergoing training, and then compared the caloric requirements of men engaged for eight hours a day in various industrial pursuits with the requirements of an active boy of from 1 to 15 years old. The more arduous the occupation, the higher the metabolism. In certain diseases careful studies had been made and some valuable facts had been ascertained. In diabetes mellitus the respiratory quotient was low, and this proved that in spite of a high sugar content of the blood sugar could not be metabolised. It had been shown also that the metabolism in diabetes was carried out at an extravagant rate. Consequently as full a diet as possible should be given, other factors which might contra-indicate such a diet being taken into consideration. In exophthalmic goitre the metabolism was carried on at an excessively high rate, while in myxœdema and cretinism it was very low. The internal secretion of the thyroid seemed to have the power of stimulating metabolism. In a cretin under Dr. Fleming's observation there was a basal metabolism of 378 calories per 24 hours before thyroid treatment; after thyroid treatment for eight days the basal metabolism had risen to 482 calories per 24 hours. Recently Dr. Fleming had been studying infantile atrophy on similar lines and he outlined various conceptions as to the cause of this condition, and explained how he had tested the hypothesis that the fats, although absorbed, might not be utilised. From the figures obtained he had shown that the atrophic infant could burn fat. Dr. Fleming demonstrated diagrams which appeared to show that the metabolism was not carried on at an extravagant rate. In adjusting the figures it was found that the actual weight of the marasmic child when used for the calculation gave erroneous results, and that up to a point the calculated weight-for-age was the correct figure. This was accounted for by the fact that until 35 per cent. of expected weight has been lost the wastage had been at the expense of metabolically inactive tissue, fat, and carbohydrate, but that below this figure there was actual tissue wastage. One outcome of the investigation was that infants should be given quantities of food suitable for their expected weight—i.e., their age—rather than their actual weight. Dr. Fleming referred to observations of heat output in fever, and to the making good of loss by feeding. In conclusion he claimed that the study of the respiratory exchange allows us to prescribe a diet suitable for various forms of industrial or athletic activity, and to the varying requirements of the human organism from extreme youth to old age. In disease it had afforded knowledge concerning the derangement of metabolism in diabetes, exophthalmic goitre, myxœdema, infantile atrophy, and fever, and further use of these methods

would doubtless throw additional light on other morbid conditions.

Discussion.

Prof. E. P. CATHCART referred to the importance of the study of the respiratory exchange. Unless such investigations were well and thoroughly done, they were valueless. All the apparatus in use had flaws and some many flaws. Of the apparatus recently introduced for general clinical use most was of little use and of limited application. For accurate results methods such as the closed circuit or gas analysis must be used. Physiologists believed this study to be one of the most fundamental. It gave clues to changes taking place in the living organism and enabled us to learn more completely what was the normal and what abnormal. In Prof. Cathcart's opinion the new methods would throw much light on many problems but would not be adaptable to clinical use on a large scale.

Dr. LEONARD FINDLAY, in congratulating Dr. Fleming on his work, said his own observations on the condition known as infantile atrophy had led to certain conclusions as to the cause of the condition which were shown to be wrong by Dr. Fleming's observations. Dr. Fleming had done experiments in a case of obliteration of the bile-duct in which there was practically no metabolism of fat. In this condition the respiratory quotient was lowered by the fat, showing that free fat interfered with carbohydrate metabolism. Towards the understanding of questions of nutrition, the study of the respiratory quotient was of great value. Finkelstein taught that an infant should be fed according to the expected weight and not according to actual weight, and Dr. Fleming's results showed that this was correct. No doubt other theories and other problems in nutrition would be helped by these studies.

Mr. JAMES TAYLOR made a communication on

Stovaine Anæsthesia.

He described the method of giving stovaine and the care to be taken in its administration, limiting his account to his own experiences in something over 500 cases. He used only the heavy variety, and while believing some of the other drugs are safer, found that none gave such a perfect muscular paralysis, and this was of great importance in abdominal cases. Mr. Taylor always used stovaine and glucose and all his injections were given in the lumbar region. He considered stovaine to be the most perfect method of blocking the afferent nerves and protecting the patient from shock, in other words, of obtaining anoci-association. A fall of blood pressure occurred just after the injection and this might in rare cases be alarming. In Mr. Taylor's opinion operations associated with much shock could be more successfully performed under spinal anæsthesia than with any other anæsthetic. In ten disarticulations at the hip after intrathecal injection all the cases recovered except one, where the collapse after a railway smash was extreme. Twelve consecutive cases of Wertheim's operation were performed without a death; in one of these cases the whole rectum from the pelvic colon downwards was also removed. Another group of cases where stovaine had definite advantages was that including intestinal obstruction in the presence of much abdominal distension. In these cases the abdominal muscles were so completely paralysed by the injection that the difficulty of closing the abdomen so often experienced was completely done away with, and, moreover, there was less tendency to paralysis of the involuntary muscle of the intestine. Mr. Taylor referred to several of the disadvantages of the method, such as the trouble of injection, usually slight, and the difficulty of procuring the proper mental atmosphere during the operation. This, however, introduced less strain on the operator than that of working with general anæsthesia where the administrator was not highly skilled. The administration of morphine and hyoscine would send the patient to sleep during the operation. Mr. Taylor said that the greatest objection to stovaine was the initial fall in blood pressure and apparent collapse. This might be overcome by injection of pituitrin or inhalation of a little ether. In elderly and feeble people, those with serious renal disease and those suffering from recent loss of blood or anæmia the condition of the patient might become alarming. The duration of the anæsthesia was variable and the higher the site of the operation, the shorter time it lasted. In the upper abdomen it lasted about half an hour and in the lower abdomen about one hour. Fifteen minutes after the administration of stovaine and glucose no further extension upwards took place.

ULSTER MEDICAL SOCIETY.

A MEETING was held on Nov. 17th, Dr. ROBERT HALL, the President, in the chair.

Prof. T. WALMSLEY read a paper on the

Origin of Man.

He dealt first with the broad outlines of evolutionary progression, and drew attention to the experimental or tentative forms which have existed at all levels of the animal kingdom. On this basis he speculated as to whether there had been tentative forms of man. The history of man was inextricably mixed with all the problems of the Quaternary or Pleistocene period. Prof. Walmsley described the period of Neolithic culture, and then the different phases of the late Palæolithic age, the peoples of the two being compared and contrasted, and the probable present-day representatives of the Magdalenian and Solutrean phases were pointed out. He defined the Mousterian period, and described Neanderthal man, special reference being made to the size of the brain and the nature of the teeth. Prof. Walmsley supported King's view that Homo Neanderthalensis was a distinct species, or at least something more than a variety of modern man. He outlined pre-Mousterian periods, and placed in them Heidelberg man, Java, Piltdown, and Galley-Hill, indicating the relationship of Heidelberg to Mousterian man. Pithecanthropus was an earlier offshoot, in some ways more different and in some ways less so, from modern man, while the Galley-Hill skull, though distorted, was modern in its general form, but primitive in detail. Prof. Walmsley concluded, therefore, that they were early offshoots from the human stem, that the differences between them and modern man were greater than the differences between modern races, and that they should probably be classed as different species.

A discussion followed in which Prof. W. J. WILSON, Dr. H. L. KISACK, Prof. J. A. LINDSAY, and others took part.

The SECRETARY announced that the annual dinner of the Society would be held on Dec. 8th.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this society took place on Nov. 17th, Dr. J. E. GEMMELL, the President, in the chair, when Dr. HAWARD BYWATER read a short paper on Malarial Eye Complications.

Dr. JOHN HAY described three cases of

Spontaneous Pneumothorax.

In each case the patient was a male in the early twenties. The pneumothorax was left-sided, and recovery was uneventful; there was no effusion and there was no pyrexia. He discussed the question of diagnosis, pointing out its extreme difficulty in some cases in the absence of an X ray report. In his opinion this was due to the frequent absence of the more dramatic physical signs so definitely associated with pneumothorax. In a closed dry pneumothorax there was a different grouping of signs, and thus recognition was less easy than in a case where amphoric breathing, metallic tinkling, and metallic echo were present. Dr. Hay discussed the character of the pain in these cases, and referred to its remarkable similarity to cardiac pain.

Mr. R. C. DUN read a paper on

Undescended and Misplaced Testicle.

He reviewed the experimental and clinical work done on the ætiology, physiology, and pathology of the condition, and sifted the evidence regarding the spermatogenic and internal secretory powers of the undescended and displaced testicle. Mr. Dun discussed the bearing on these functions of the various operative procedures, and detailed the technique of the many operations suggested for the condition, giving results of operations in his own cases. He drew the following conclusions from his study of the subject. (1) Early operation is not advisable on account of the natural tendency for a testicle undescended at birth to descend into its normal position during the first years of life. (2) The associated presence of a hernia does not call for early operation. (3) The age selected for operation should be from 8 to 10 years. Testicles undescended at that age are unlikely to descend naturally, and symptoms—pain and attacks of orchitis—very frequently develop at this period. (4) Retained testicles which cannot be palpated should not be subjected to operation. (5) An undescended testicle should never be removed, on account of its possible spermatogenic power and its certain internal secretory power. (6) Abdominal replacement is not to be recommended as it is proved experimentally to destroy the spermatogenic function, should any be present, though the internal secretory power is retained. (7) Transplantation into the scrotum is the operation of choice. It can be successfully performed without endangering the vitality of the organ in the majority of cases where an undescended testicle is palpable.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society MM. Pissavy and Touvay communicated a paper on the Treatment of Hæmoptysis by Pituitary Extract, in which they reported their observations on 15 cases of considerable hæmoptysis in pulmonary tuberculosis treated by intramuscular or intravenous injections of the extract of the posterior lobe of the hypophysis. They maintained that with the exception of artificial pneumothorax there was no method so effectual for checking hæmoptysis. Although in the great majority of cases the cessation of hæmorrhage was immediate, it was not always permanent. Not infrequently the hæmoptysis recurred after an interval of a few days and a fresh injection was required. The intramuscular route was often inadequate, and the intravenous route was alone reliable. One c.cm. of pituitary extract in 10 c.cm. of normal saline was injected slowly into the vein, five minutes being taken for the operation so as to avoid any shock. The most probable explanation of the action of the drug was that it caused an increase of the coagulability of the blood (Emile-Weil and Porak).

Mr. A. RICHAUD read a paper on the Posology of Cicutine Hydrobromide, in which he stated that as the results of observations in man and experiments in animals the toxicity of this salt was not so great as had hitherto been supposed. He had given one dose of 10 cg. subcutaneously or 15 cg. in two doses. Some signs of intolerance were observed when 16 cg. were injected at once.

In a paper on the Treatment of Gonorrhœa by Lymphotherapy Mr. S. ARTAULT DE VEVEY reported 18 cases of gonorrhœa, 11 of which were in men and 7 in women, successfully treated by lymphotherapy—i.e., by intramuscular injection of the patient's serum obtained by the application of a blister.

Mr. R. LAUTIER read a paper on the Treatment of Gonorrhœa by Cedar-Wood Oil, in which he stated that he had treated cases of acute and chronic gonorrhœa with or without prostatitis, cystitis, vesiculitis, and orchi-epididymitis by administration of cedar-wood oil. The doses ranged from 2 to 8 g. a day. The dose was at first 2 to 3 g. and was gradually increased to 25 to 50 cg., the maximum dose being continued until recovery was complete—i.e., when the following requirements were fulfilled: (1) Disappearance of all discharge. (2) Disappearance of all filaments in the first jet of urine passed on getting up in the morning. (3) Disappearance of all subjective symptoms in the patient. Mr. Lautier's conclusions were as follows: (1) Cedar-wood oil was very well borne by the patients, even in such large doses as 6 to 8 g. a day. It did not cause any digestive disturbance, renal reaction, lumbar pain, or albuminuria, which cannot always be avoided with sandal-wood oil preparations whatever their degree of purity. No nervous symptoms were ever observed, such as vertigo, headache, excitement, or depression. (2) In acute gonorrhœa the various oils of cedar wood have a rapid action, cure being all the more readily obtained the earlier treatment is commenced. The previous use of antiseptic injections seemed to delay recovery. (3) In cases of gonorrhœa treated exclusively by cedar-wood oil from the commencement of the disease no urogenital or general complications were ever observed. (4) In cases of old-standing gonorrhœa which were refractory to all other treatment, a very rapid cure was sometimes obtained by the use of cedar-wood oil. In other cases it had to be given regularly for one and a half to two months to obtain a permanent cure. A few chronic cases proved refractory even to large doses of cedar-wood oil. These failures were exceptional with the essence of *Juniperus virginiana* or *Bermudiana*, and more frequent with the essence of *Cedrus atlantica*. (5) In cases of prostatitis, cystitis, vesiculitis, and orchi-epididymitis a rapid cure was obtained, except in cases where the gonococcus was associated with other micro-organisms, when 1 or 2 g. of hexamethylene tetramine were required to obtain a satisfactory result.

Mr. LAUTIER also read a paper on the Special Action of Cinnamate of Soda in Tuberculosis, in which he came to the following conclusions: (1) Cinnamate of soda definitely increases the output of urine, the increase amounting to one-third of the normal amount of urine passed in the 24 hours. (2) If before treatment the urine passed is deficient in urea and rich in uric acid, urates, and phosphates, after a few days' treatment the urine shows the following changes: The urea is increased to the normal amount, and the uric acid and urates are diminished in proportion to the increase in the urea. The phosphates are much diminished, and their elimination tends to return to normal. (3) If before treatment the patient's urine is normal, it undergoes no change in the course of treatment. (4) If before treatment one of the elements in the urine is excreted below the normal amount, the amount excreted tends to return to normal under treatment. Cinnamate of soda thus proved to be a mild diuretic and a regulator of the metabolism of nitrogenous substances and phosphates in the tuberculous organism. The gain in weight shown by the patient was mainly due to this action.

Mr. A. CLARET read a paper on the Treatment of Anaphylactic Symptoms of Alimentary Origin, in which he stated that after unsuccessful treatment of this condition by various other drugs, he gave hexamethylene tetramine by the mouth, being guided by the following considerations: (1) The drug raises the blood pressure and increases its viscosity, these conditions, as Lumière has shown, tending to inhibit the development of anaphylaxis. (2) Insufficiency of the liver and kidneys, on which this drug has a selective action, creates a condition favourable for the development of anaphylaxis. Rapid recovery followed administration of uroformine in doses of 1 to 1½ g. daily.

Mr. HENRY BOURGES reported a case of *B. coli* Septicæmia in a child, aged 11, cured by subcutaneous colloid therapy.

ROYAL CANADIAN INSTITUTE.—At the next meeting of this institute, to be held in Toronto shortly, Lieut.-Colonel R. McCarrison will give an address on Diet and Malnutrition.

RONTGEN SOCIETY.—A general meeting will be held on Tuesday, Dec. 6th, at 8.15 P.M., in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C. A paper on Some Investigations on Transformer-Rectifier Sets for X Rays will be read by Mr. M. A. Codd and a note on X Ray Tubes Connected in Parallel will be communicated by Mr. C. E. S. Phillips. Members wishing to read papers, show apparatus, or lantern-slides, are requested to communicate with the Hon. Secretaries, Dr. E. A. Owen, The National Physical Laboratory, Teddington, Middlesex; and Dr. Russell J. Reynolds, 140, Harley-street, W. 1.

A WEST SUSSEX SANATORIUM.—On Nov. 18th, Lord Leconfield opened the West Sussex County Council's Sanatorium near Chichester. The Council has purchased Aldingbourne House, a fine Georgian mansion standing in a well-timbered park of about 120 acres, and converted it into an institution for tuberculosis patients. There are 10 wards accommodating 44 patients, and in the grounds there are revolving shelters for 15 patients. The total cost of the scheme has been approximately £40,000, but the average price per bed has been reduced by the grant from the Government, and the county council has placed the figure at £500 per bed. Of the 120 acres, the county council has reserved 35 acres for the sanatorium requirements, and the remaining 85 are being utilised for small-holdings.

Reviews and Notices of Books.

ESSENTIALS OF MENTAL MEASUREMENT.

By WILLIAM BROWN and GODFREY H. THOMSON. Cambridge Psychological Library. Cambridge University Press. 1921. 21*s*.

THIS book is a successor to one published by Dr. Brown in 1911, the old material standing without much change, but being supplemented by five new chapters from the pen of Dr. Thomson. The two authors write separate prefaces, and Dr. Brown appears to reserve his opinion on certain views of his colleague. The book falls into two parts, on Psychophysics and on Correlation. Of the former, a chapter of 12 pages is given to the nature of mental measurement, but is restricted to the case of sensory thresholds. A highly condensed chapter is allowed to the actual methods of measuring these, one to Skewness of Frequency Distributions, and one to the Elementary Theory of Probability. The second part of the book, which is about equally long, deals successively with the following topics: Introduction to Correlation; Mathematical Theory of Correlation; Influence of Selection; Correction of Raw Correlation Coefficients; the Theory of General Ability; and a Sampling Theory of Ability. There are in addition several useful mathematical tables.

If we compare the book with its chief existing English rival, the "Mental and Social Measurements" of Thorndike, it becomes obvious that it aims at being fundamental and concise, rather than at bringing the exposition within the compass of very weak mathematicians. If the ground the authors cover omits much that many would like to see there, this is chiefly due to their assigning a relatively large space to certain questions in which they are especially interested. One of these is the correction of raw correlation coefficients. Here they strongly oppose the corrective formula suggested by Prof. Spearman, but unfortunately their position is mainly based on some curious slip in the value of the "probable error" concerned, this being given by them of the wrong order of magnitude. Still greater space is devoted to the theory of ability, in respect of which Dr. Thomson strongly combats the view that the correlations found between the results of mental tests should be attributed to one "general factor." But it is to be regretted that he could not have managed to introduce some notice of the basal objections to his argument published by Spearman in May, 1920.[1] The theory proposed by Dr. Thomson in place of that of the general factor is one of "sampling." According to this, the said correlations are due to "a number of factors at play in the carrying out of any activity such as a mental test, these factors being a sample of all those which the individual has at his command" (p. 188). Other topics receiving full, but by no means excessive, notice are the Criterion of Goodness of Fit of Psycho-physical Curves and the calculation of correlations by ranks instead of by measurements. Here Dr. Brown, though still maintaining a cautious attitude, has at any rate widely departed from the very pronounced hostility of his earlier edition.

The book may be thought to attempt to combine two very different aims. The first is to supply a general text-book on the methods of mental measurement, whilst the second is to write a keenly controversial pamphlet, of which the chief topic is not general methods, but special ones applied to special matters. On the other hand, these matters do no doubt stand at present in the very forefront of experimental work, and the authors are among those whose views will be received with the highest degree of interest. Their words ought to and will be widely read. The polemical trend is tempered by generous eulogies of adversaries and the style of writing is admirable.

[1] Psychological Review, 1920, xxvii., 159–172.

PHYSIC AND FICTION.

By S. SQUIRE SPRIGGE, M.D. Camb., F.R.C.S. Eng. London: Hodder and Stoughton. 1921. Pp. 307. 12*s*. 6*d*.

THIS book ranges over a wide field of medical and paramedical interests—the medicine of the novels to which the author confesses an addiction, the probability of being able to poison anyone without being found out, what "out-of-date" means in medicine, eugenic marriage certificates, Cornelius Agrippa—one might almost say it treats *de quibusdam aliis* as well as *de omnibus rebus*.

Running through the book are two main propositions. The first is that medicine is progressive and constantly advancing, sometimes by slow accretion, sometimes by one of those fundamental leaps which does not simply add one more piece to knowledge, but multiplies all previous knowledge a hundredfold. The difficulties of the poisoner have gradually become greater and greater with the advance of chemistry, culminating perhaps for the present in the admission of the validity of physiological tests for aconitine with which Sir Thomas Stevenson hung Lamson. But Lister transformed the surgical world by one great bound. One way and another this progress, quick and slow, is going on all the time, and compels medical education and medical practice to enlarge their borders in proportion. The second, less appreciated but no less important, thesis is that the doctor has now definitely ceased to be a member of a craft whose mysterious and exclusive information is doled out to the public in pontifical decisions. There are questions whose medical bearing is as obvious as their general importance, though answers to them cannot be dictated by medicine. The medical factor has now intruded into so many matters of public interest that an increasing number of thoughtful men and women are compelled to solve a certain number of medical problems either for themselves or in coöperation with doctors. The abandonment of a distinctive dress by medical men means something more than a desire for personal comfort or unobtrusive modesty. It means that doctors are not set apart from an educated public, the whole of which must and does play its part in the promotion of healthiness. No one can doubt the importance of this change, least of all those who read it in Sir Squire Sprigge's urbane and moderate statement and who will realise in his volume that it is possible to be desperately serious without being in the least bit solemn—indeed being sometimes very much the reverse.

TUBERCULOSIS.

Tuberculosis of Children. By Prof. HANS MUCH, Director of Department for Science of Immunity and for Research of Tuberculosis at the University of Hamburg. Translated by Dr. MAX ROTHSCHILD, California. New York: Macmillan Company. 1921. Pp. 156. 12*s*. 6*d*.

IN this book on tuberculosis of children Prof. Much takes a long time in getting to the children, but when he does so he is much to the point. Only the last half of the book is devoted to children; the first half is a general survey of the problems of immunity in relation to tuberculosis. In both parts the author is remarkably lucid, and, considering the great complexity of the subject discussed, some readers will be tempted to raise the question: Is the author able to discuss these problems with clear-cut precision, as if most of them were already solved, because his is a master mind, or is his clarity of view simply due to his following only his own lines of thought, and using blinkers in regard to theories and hypotheses which clash with his own? He does, indeed, discuss the views of other authorities, but most of them, to judge by his verdict, must be strangely misguided persons. The satirical exclamation, "How these Christians love one another!" would seem to be applicable to present-day pathologists as well as to early Christians. On Spengler's I.K. the author passes the judgment

that it " . . . is entirely devoid of any biological justification." A little further on he says of the same preparation that " . . . the agglutinating bodies which are supposed to be present in the red blood-cells . . . so far have had a most mystic existence in science." The author's opinion of the arguments in support of Maragliano's serum are summed up in the sentence : " Very crude ideas ! " Marmorek fares little better, and his theory as to the nature of the tuberculin reaction is dismissed with : " This opinion is without foundation and has been proven wrong by me." Friedmann's turtle vaccine is also discussed unfavourably. After the storm provoked by all this iconoclasm, the reader is guided into the calm and safe waters of treatment by partial antigens. The author admits that it has been most difficult to disentangle the conflicting views and experiences with regard to tuberculin, but " . . . out of this chaos of varied opinions have developed the convincing and unshaken theories which are the results of the latest research." There follows an account of Prof. Much's partial antigen treatment. With regard to the possibilities of prophylactic vaccination on Deycke-Much lines, the author admits reluctantly that the proof of its usefulness would, of course, have to be furnished by statistics, but a little further on he adds plaintively, " Statistics have ruined many a possibility." Supporters of Much and his school may find in this half of the book a useful summary of his teachings. Others, who credit the author with a vividly creative and frolicsome imagination, are not likely to change this opinion.

While the first half of this book is a reflection of the author's vocation, the second half represents more or less an avocation, and is certainly the more instructive of the two. The modern view that in childhood the disease usually takes the form of hilus tuberculosis is accepted as correct. Prof. Much holds that pulmonary tuberculosis is secondary, as a rule, to disease of the glands in the hilus region. As for pleurisy in childhood, he regards it not as a primary tuberculous lesion, but as a comparatively late sequel to tuberculosis of the bronchial glands.

The author is to be congratulated on his translator, who has most faithfully reproduced the tone as well as the more material contents of the book. A few may consider this tone too perky and truculent ; but most will probably enjoy the book from cover to cover.

Domiciliary Treatment of Pulmonary Tuberculosis. By F. RUFENACHT WALTERS, M.D., B.S., M.R.C.P. Lond., F.R.C.S. Eng., Joint Tuberculosis Officer for Surrey ; late Physician Crooksbury Sanatorium and Mount Vernon Hospital for Consumption. London : Baillière, Tindall and Cox. 1921. Pp. xii. + 290. 12*s.* 6*d.*

IN the preface to this book Dr. Rufenacht Walters states that his object has been to furnish the practitioner with a compact and reliable guide to the treatment of pulmonary tuberculosis. He has succeeded in this object. In spite of its modest dimensions, it would hardly be an exaggeration to apply the term " encyclopædic " to this book ; the author has condensed nearly all the modern literature, and much—too much—of the back literature of the subject into a wonderfully compact digest. With regard to remedies which have been tried and discarded, such, for example, as the intravenous injection of formaldehyde, it seems a pity that they should figure even briefly in this work. The practitioner is often a busy man, and he may have more than enough to do in mastering remedies which have survived the ten-year test. In his discussion of such remedies as Maragliano's serum the author omits to give his personal opinion ; yet this is just what the practitioner wants to know. In some cases it is certainly possible to read between the lines that the author's account of a remedy is of the nature of an obituary notice, but he is unfortunately too considerate of the feelings of others to damn their work outright as valueless. Here and there, however, there is no mistaking his opinion, and in rationing his review of Much's partial antigens to exactly one line and a half, he conveys more to the reader than if he had let himself go. It is interesting to note that the author regards tuberculin " . . . as a remedy of the first importance." At present this is not the fashionable verdict on tuberculin, and the author shows no little courage in defending what might seem to many a lost cause. But as he is probably more familiar with the literature of tuberculosis than anyone, his opinion carries weight.

Tuberculosis and How to Combat It. By FRANCIS M. POTTENGER, A.M., M.D., LL.D., F.A.C.P., Monrovia, California. London : Henry Kimpton. 1921. Pp. 273. 10*s.* 6*d.*

Dr. Pottenger's book, he tells us, is published at " . . . the solicitation of my patients in order to put in a permanent form talks which have been delivered to them from time to time." From start to finish this work is characterised by sweet reasonableness, and the author has taken pains to explain carefully the reasons for the various rules he lays down for his patients. The book is worth reading both by doctors and patients, for it contains many useful hints as to their mutual relations.

CHEMISTRY.

Die Arzneimittel-Synthese auf Grundlage der Beziehungen zwischen chemischem Aufbau und Wirkung, für Aerzte, Chemiker und Pharmazeuten. Von Dr. SIGMUND FRÄNKEL, A.O. Professor für Medizinische Chemie an der Wiener Universität. Fünfte, umgearbeitete Auflage. Berlin : Verlag von Julius Springer. 1921. Pp. 906. M.276.

THE fifth edition of this voluminous and comprehensive book is a further enlargement of the previous one of 1918. The literature of the subject is now incorporated up to May, 1921. The new matter deals mainly with the subjects of taste and of quinine and arsenic compounds. The book is now so full of details that it is more of the nature of a dictionary than a general account of the subject ; the mass of detail tends to smother the descriptions and makes the reading wearisome. The book is written on the unvarying German plan. There is a general section consisting of three chapters on the theory of the action of drugs, both inorganic and organic, with special reference to the part played by the individual chemical groups in the compound in the physiological action. A fourth chapter deals with the changes of organic substances in the organism. In the special section (14 chapters) a description of the numerous preparations employed as antipyretics, narcotics, alkaloids, antiseptics, purgatives, diuretics, &c., is given. The large index is useful and well compiled.

The book will be of service to those interested in the chemical constitution of drugs and their action on the organism, and will appeal as much to chemists as to the medical profession.

The Qualitative Analysis of Medicinal Preparations. Second edition. By H. C. FULLER. London : Chapman and Hall, Ltd. ; New York : John Wiley and Sons, Inc. 1920. Pp. 191. 12*s.* 6*d.*

A KNOWLEDGE of the use to which a medicine is to be employed is obviously often a guide in arriving at its possible composition, and its price will often suggest what will probably not be present. Mr. Fuller rightly points out that most of the tests devised for detecting active ingredients have been worked out on pure substances and that little or no account is taken of the influence on the reaction of other substances present, for example, in a complex medicine. He has therefore devised a scheme of separation by which the different substances are obtained at particular stages of the analysis and their identity established by suitable tests. The first portion of the work describes the preliminary manipulation for the separation of the ingredients into large groups, followed by the separation into smaller groups and

individuals, and tests for identification. The second portion describes the methods to be employed in manipulating the various classes of medicinal products to make them separable in accordance with this scheme. There is ample internal evidence that the volume has been written by one with much experience in the analysis of drugs and medicinal preparations. In a future edition Mr. Fuller may see his way to be a little more precise and amplify such expressions as "agreeable" or "disagreeable" odour.

The book will be useful to those who are concerned with the chemical examination of pharmaceutical products.

A French-English Dictionary for Chemists. By AUSTIN M. PATTERSON, Ph.D., formerly Editor of *Chemical Abstracts*. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1921. Pp. 384. 18s.

THIS book forms a companion to the German-English Dictionary for Chemists by the same author, reviewed in THE LANCET of Dec. 29th, 1917. This volume also is concise and easy of reference. We have found remarkably few errors and those not important. For example, *trognon* is not the core of a cabbage but the stump. To the explanation of *primeur*, "early product," might be added "or fruit." *Epuisé* also means "out of print." The inclusion of terms such as roi, reine, baronne, chevalier, seigneur, and monsieur seems unnecessary, and the American spellings of "thru" and "thoroly" appear strange. But apart from these trifles the compilation is unusually accurate, and the paper, binding, and printing are excellent.

Handbook of Chemistry and Physics. Eighth edition. By CHARLES D. HODGMAN, M.S., Assistant Professor of Physics in Case School of Applied Science; assisted by MELVILLE F. COOLBAUGH, M.A., Professor of Chemistry in Colorado School of Mines; and CORNELIUS E. SENSEMAN, M.A., Color Laboratory, United States Bureau of Chemistry. London: Chapman and Hall, Ltd. 1921. Pp. 711. 24s.

THE eighth edition of this book of over 700 pages contains a mass of accurate and useful information. That a large portion of the physical data is culled from the Smithsonian Tables is a guarantee of reliability, and there are few instances where one looks in vain for numerical values for the physical or chemical constants which have been experimentally determined. The arrangement of the book as a whole makes it easy to find the data required; possibly, however, it would have been better to place the definitions of the physical quantities and the characteristic chemical formulæ before, instead of after, the data pertaining thereto. On the whole, the subject-matter is rigidly chemical or physical, a few pages only being devoted to what are called Laboratory Arts and Recipes. The five pages devoted to the solution of problems in chemistry and physics do not enhance the value of the book. There are two and a half pages devoted to the functions, uses, and composition of foods which are obviously inadequate as an account of this wide subject. The volume, though large, is handy, and is equipped with an index covering 17 pages.

JOURNALS.

RIVISTA D'OSTETRICIA E GINECOLOGIA PRATICA. September, 1921. Anno III. Published by Prof. F. Montuoro, Palermo.—This is the official organ of the Sicilian Obstetrical and Gynæcological Society. The present issue contains an original article by Prof. Romolo Costa, director of the School of Obstetrics and Maternity of Novara, on Some Objections to Partial Symphysiectomy. These objections, which are four in number, are refuted by the author. He states that: (1) There remains no doubt whatever that partial or superior symphysiectomy in cases of pelvic contraction opens the way for the passage of the fœtus, and has its chief application in simple flat pelves where the true conjugate diameter is not below 75 mm. (2) As regards the permanent effect of the operation, in none of the women operated on was there any bony regeneration of the osseo-cartilaginous wedge taken out. (3) Out of seven women operated upon none of them showed any disability in walking as soon as they left their beds, usually about the tenth day. (4) There was no fear of any septic infection of the joint.—Dr. C. Calcaterra, of the University of Pavia, describes five cases of transperitoneal suprapubic Cæsarean section. He claims that this is the operation of election owing to the possibility it affords of ensuring exclusion of the uterine opening from the peritoneal cavity, and for its greater facility, simplicity, and rapidity of technique, while it possesses all the advantages of the extra-peritoneal method.—Dr. A. Buscemi, of the Obstetric Clinic at Florence, describes two cases of hepatic carcinoma occurring in pregnancy, one complicated by cardiac disease and ankylostomiasis, the other more advanced but pure—both in the first six months. The pregnancy exerted an unfavourable influence on the clinical course of both patients. In the case where it was the sole lesion there was rapid progress of the disease with effusion into the pleura; in the other case the aggravation was not so manifest until after parturition.—A number of pages are devoted to extracts and reviews, both Italian and foreign, and a brief article treats of subjects interesting to nurses trained in this branch.

HEALTH AND EMPIRE.—We have received the first issue of a monthly journal (price 6*d.*) issued by the National Council for Combating Venereal Diseases. In a prefatory note Lord Gorell hopes that it may play a valuable part in concentrating activity and formulating public opinion in the antivenereal campaign. An editorial article deals with the information which now flows in from European public health departments. Broadly speaking, it appears that Holland along with this country rely upon the voluntary principle, while Scandinavian countries, our own Dominions, and America avail themselves of certain compulsory powers. Outside this country the question of prophylaxis has not become acute. Dr. F. N. K. Menzies deals with the provision of hostels in London, without which no venereal disease scheme can be regarded as complete. Description is given of the efforts being made for amending the Merchant Shipping Act in order to remove from the seafarer the disabilities from which he suffers when he contracts venereal disease. The present position of affairs at Constantinople is described: the presence of destitute Russian refugees in addition to a congested permanent population of Greeks and Armenians has led to an amount of prostitution which is a menace to the public health. It is hoped that an International Red Cross Commission on public health will deal with a situation which has become a serious anxiety to the armies of occupation.

Corrigendum.—In an annotation last week dealing with the memoir of Prof. Howard Marsh, we alluded to him as Vice-Chancellor of Cambridge University. We learn, however, that he was already over age for that position when appointed Master of Downing College.

DAVID LEWIS EPILEPTIC COLONY.—At the annual meeting of the supporters of the David Lewis (Manchester) Epileptic Colony, held in Manchester on Nov. 25th, it was stated that the average number of colonists in residence was 356, the highest in the colony's history. The beds provided for four army men nominated by the Ministry of Pensions had been fully occupied. The occupations found for many of the colonists on the farm had proved most beneficial to them. Dr. Alan McDougall stated that drugs still took only a minor part in the treatment of their colonists; amongst patients seeking admission to the colony were persons to whom anti-epileptic drugs had been given over long periods without much success. Almost all the colonists were improving in health, and were happier than they were in their previous surroundings; some became so much better that they were able to return home and earn their own living.

THE LANCET.

LONDON: SATURDAY, DECEMBER 3, 1921.

The Sanctity of Medical Certificates.

AT the session of the General Medical Council, which has just been concluded, certain practitioners were summoned to appear on the charge of improper issue of medical certificates, and after the consideration of their case by the disciplinary body of the profession received a serious warning. The giving of medical certificates is now an onerous part of the practitioner's duty, and the work has been largely increased by the passage of the National Insurance Act with no commensurate increase of emolument. It might be well if the General Medical Council would consider the making of a representation upon this point to the Privy Council, or through the Privy Council to the Government; but it is absolutely necessary that the General Medical Council in carrying out its duties as a disciplinary body of the profession should insist that such certificates as are given by medical men should be given only with a full sense of responsibility.

When the new system of medical certification of incapacity of insured persons for work was introduced in 1915 the function of the general practitioner as certifier was brought under review, and it would now be well to inquire how far the innovation has been successful in meeting the difficulties of both parties. The complaints recently made by approved societies hardly refer to the difficulties which led to the establishment of the new system, being concerned rather with the few flagrant instances of unprofessional conduct. When such complaints are found after investigation by medical service sub-committees to be substantiated, it still remains to consider how far these lapses are due to mere slackness and want of appreciation of the importance of certification, and how far to the ignorance of the practitioner as to his obligations both moral and legal towards his patients and the insurance authorities. Certificates appear to be looked on by certain practitioners as matters of form incidental to ordinary practice, and two instances which came before the General Medical Council at the session just closed illustrated this fact. Medical certificates are most important documents. Those required by the new system of certification ensure certain benefits to the sick insured person legally entitled to them; they also safeguard the approved society endowed with certain statutory duties. But the certificate of a medical man is in most cases the main guarantee against fraud or illegal demands on insurance funds. A certificate is defined as "a written declaration of some fact," and to certify is defined as "to make known as certain." The form of certificate is so worded that it states certain "facts" and certain opinions. The first fact is that the certifier has "this day," or on a certain day, examined the patient. The second fact is that in the opinion of the certifier the insured person is incapable of work, and the third fact is that he is incapacitated by reason of "a specific disease or bodily or mental disablement." Of the first there can be no doubt, but in the second and third statements the fact is associated with the opinion of the certifier, acting to the best of his knowledge and belief. His signature is the guarantee of bona fides, which is shaken not so much by the correctness or otherwise of the opinions stated in the certificate as by the deception practised when certificates are given under circumstances which preclude proper consideration or render it impossible for the statement to be true. Although a uniform phrasing saves time, it is in one respect almost a pity that so much of the certificate is printed. Had the statement to be written out it would be perfectly clear what is the nature of the statement which the practitioner is making when he attaches his signature.

The medical certificate is the main evidence or guarantee on which sickness benefit is paid; it has been compared to a cheque payable on demand, but it is not the only evidence and societies are compelled by regulations to review such certificates and to regard them in the light of any other facts concerning the sick insured person within their knowledge. They may even refuse to acknowledge the certificate as a proper guarantee and decline to pay benefit, but they would be required in such a case to show cause for refusal, if the insured person exercises his right of appeal. Many a practitioner rightly regards it as a matter of pride for his certificates to be questioned, for the value of the certificate and the estimation of the facts and opinions it contains depend to some extent upon his professional reputation. In the ordinary course of administration, certificates are reviewed for various reasons and a routine method is adopted for selecting cases to be referred to the regional medical officers. The first reason appears to be the duration of illness; these officers were appointed to provide a further opinion in cases of prolonged incapacity. The second reason is vagueness of wording and the use of such phrases as debility or catarrh. Where the certificate is purposely vague, a precise description of the disabling condition must be furnished to the official referee. The third reason for referring cases is the receipt from a sick visitor of a report which, from the lay point of view, throws doubt on the insured person's incapacity, owing to something in his observed conduct or activities. Close coöperation with the regional medical officers will assist the practitioner in obtaining justice for his insured patients and in protecting himself from the importunate person who may readily make his life a burden. Certification is a many-sided obligation.

Epidemiology of Influenza.

THE preface to Dr. WARREN T. VAUGHAN'S important epidemiological study[1] of influenza is dated Sept. 17th, 1920, and he was therefore not able to use the elaborate report on the great pandemic issued by our Ministry of Health 12 months ago. While the author may regret this circumstance, since it has deprived him of the opportunity of strengthening certain conclusions and modifying others, the reader will welcome a completely independent account of the same series of events from the Harvard Medical School. The preliminary sections of the monograph treat on familiar lines of the history of influenza. Prof. RAYMOND PEARL'S study of the correlation between the explosiveness of an outbreak and the pre-epidemic general rate of mortality in cities is fully described. In English cities the standard death-rate was highly correlated with the death-rate of the first wave, but little correlated with the death-rate in the second and third

[1] Influenza, an Epidemiologic Study. By Warren T. Vaughan, M.D. Baltimore, 1921 (The American Journal of Hygiene). Pp. 259.

phases of the pandemic, a result in general agreement with that of PEARL. Dr. VAUGHAN next considers the history of influenza between 1893 and 1918 and goes carefully into the date of first appearance in 1918. He is inclined to trace the origin of the pandemic to America and to attribute its dispersiveness and virulence to movements of individuals and masses from one part of the world to another, whereby the partly adapted parasites become planted, as it were, into new soil, and the original equilibrium is disturbed—quoting the actual words of THEOBALD SMITH. The results of a sampling inquiry, similar to but more detailed than that undertaken by Dr. J. NIVEN and the Ministry of Health, resemble those of the English investigators, but Dr. VAUGHAN had materials for a consideration of racial and occupational susceptibility. The latter revealed no significant selection; as to the former it would seem that the Irish suffered less than other races—a contrast to their high mortality and morbidity rates from tuberculosis. Evidence of a relation between overcrowding and attack rate was hardly more striking than in England, but the following figures are remarkable: Of 360 persons occupying the same bed as a patient, 166, or 45·2 per cent., were infected; of 303 occupying the same room but not the same bed, 59, or 19·5 per cent., were infected; of 1064 members of the family of a patient but not belonging to one of the two previous categories, 273, or 22·3 per cent., were infected.

On the important subject of immunity, Dr. VAUGHAN was led to think that previous attack conferred no protection against the 1920 recurrence, a conclusion compatible with the results of the English inquiry, from which some protection against an autumn attack appeared to be conferred by the summer attack of 1918. Both sets of observations agree that the absence of any enduring immunity is an important factor in the explosiveness of primary influenza. The monograph ends with an appeal for further study. Influenza will surely return, Dr. VAUGHAN writes; he gives his reasons for asserting that there will be mild epidemics within the next few years, that later another pandemic will arrive, and that after this will come pandemics in succession. This is not an assertion made for flesh-creeping purposes, but a deduction from observation. In 1918, as in 1889, we were caught unprepared; let us do our utmost to prevent the recurrence of the tragedy; to delay is to lose the valuable information gained during the last two years. The future is not without well-grounded hope, but success will not be achieved until we have a much deeper understanding of the epidemiology of influenza. We think that the results reported by Dr. VAUGHAN, together with those of the Ministry of Health, justify a conclusion more definite even than these words convey. It is clear that influenza is in a different epidemiological class from that which contains small-pox and typhoid and that it has affinities with typhus on the one hand and pneumonic plague on the other. Small-pox and typhoid are epidemic diseases which, wholly apart from any general sociological factors, can be absolutely controlled. Their complete control is sadly impeded by ignorance and incompetent or selfish local authorities; the intellectual problem itself has been solved. Typhus and plague are in a different class. Of the former we may predicate with certainty that it will always become epidemic when the general standard of life has fallen to a critical value; of the latter we can say that a low standard of life, *plus* an unknown x, must be realised. The optimist hopes that influenza is more nearly akin to plague than to typhus, and that the x may be unmasked and prove to be a something which we can control here and now. The pessimist, focussing his attention upon the known factor, will be of opinion that a sinking standard of life, underfeeding, unemployment, overcrowding—conditions now characterising so large a proportion of the inhabitants of Europe—must sooner or later bear fruit which even the epidemic intelligence service desiderated by Dr. VAUGHAN will be unable to nip in the bud.

Noise and its Cure.

NOISE is a serious evil in industrial communities. Continuous exposure to loud noises may lead to a sense of weariness that impairs working capacity more quickly than does severe muscular fatigue. It thus tends to lower output and so to raise the cost of production. From the economical point of view noise may therefore be regarded as exercising the same malign influence upon production as inefficient management, poor light, bad ventilation, or excessively long hours. This was, in brief, the message of Prof. H. J. SPOONER'S Chadwick Lecture delivered at Blackburn on Nov. 21st—to combat the noise plague, whether in our city streets or in our workshops and factories, and we are grateful to him for initiating a public movement for its removal. As Dr. DAN MCKENZIE has pointed out in "The City of Din," civilisation is noise, the more it progresses the noisier it becomes, and he has pictured Nature's desperate remedy of producing a human race devoid of hearing in order to protect the brain from the damaging effects of overwhelming auditory stimuli. The fact is that while noise may be tolerated, if not ignored, by healthy people at their best, the majority are not in a condition of bodily and nervous health to resist the irritation and consequent weariness induced by a long continuance of loud noises. It is not only the naturally hypersensitive CARLYLES who suffer, for few long-distance travellers by rail are altogether exempt from a fatigue which is probably due as much to the incessant bombardment of the brain by massive auditory stimuli as to any other factor. Over and above the effect of noise upon the general nervous system, there is the deleterious influence exerted directly upon the hearing-organ of workers in noisy occupations; and the list of occupations causing noise deafness at the present day is a long and increasing one. Hitherto, it must be confessed, the general attitude towards the evil of din, whether in the workshop or in the street, has been to regard it as inevitable, and to seek mitigation by the personal use of antiphones or ear-plugs.

But—and it is well to state it frankly—din, even in an industrial milieu, is not inevitable. We need go no further than to the modern motor-car to realise that when quietness in machinery, essentially noisy in its working, is of marketable value, the genius of engineering will ultimately succeed in supplying that quality. The difference between the smoothly running, almost silent automobile of 1921 and its fussy predecessor of 1900 is a measure of the preference given by purchasers to a noiseless vehicle. Now if, as Prof. SPOONER suggests, quietness in a factory can be shown to have an economic value then we may reasonably anticipate that it will be forthcoming. Even now "quiet running" is beginning to figure more and more in the advertisements of engines other than those of the internal combustion type. Fortunately, apart from intentional reduction of noise, the natural evolution of modern engineering is tending in the direction of electric transmission in

place of the old-fashioned noisy rotating shafts and belts. To enforce the abolition of unnecessary din Prof. SPOONER calls for an improvement in the existing laws. Public opinion has already led to some advance. We need submit no longer to the nerve-racking key-bugles of beanfeasters or the shrill whistling of commissionaires for taxis. But no public authority can yet prevent the screeching of a steam-saw in the vicinity of dwelling-houses. To those who suffer thus, only a civil action at law is open with all its costly delay. But progress under stress of economic pressure may prove more prompt than legal enactment. Prof. SPOONER considers the advisability of fixing a limit of permissible noise, for which purpose a unit, or standard of noise would be necessary. It might be difficult to find such a standard, although in general it would be fair to regard as "noise" any sound in street or workshop which necessitated the raising of the conversational voice within a few yards of the source of the sound. To replace a test sound so variable as the human voice, a noise-producer of a certain definite intensity could be devised, the inaudibility of which by normal ears within the stated distance would constitute the limit of permissible sound. But physical details may safely be left to the ingenuity and resourcefulness of the scientific engineer, once he has been given clearly to understand that civilisation is no longer to connote noise.

The Phenomenon of d'Herelle.

IN 1915 F. W. TWORT[1] described the occurrence of spontaneous lysis of micrococci derived from calf vaccinia, and attributed the phenomenon to ferment action. The same phenomenon was described independently by D'HERELLE in 1917, and the latter's persistent investigations and constant advocacy of an interesting explanation of the facts observed has brought the subject into great prominence throughout the world. Briefly, the facts elucidated by D'HERELLE are these. If an emulsion of a stool from a case of dysentery be filtered through a Chamberland filter the clear bacteria-free fluid obtained is capable of dissolving *B. dysenteriæ* Shiga, in vitro. Such extracts differ in their activity, the less active ones only destroying a certain number of the organisms, whilst the more active ones procure the complete solution of a whole culture. A still more striking fact follows: such lysed cultures contain the active principle in large amounts, so that when a trace of the solution obtained in the first experiment is added to a second normal culture of Shiga's bacillus this also undergoes lysis, and a trace of this solution will reproduce the phenomenon in yet a third culture, and so on indefinitely. Only living bacilli undergo lysis; dead cultures are not affected. These, in the main, were the first facts elucidated and they remain undisputed. The lytic phenomenon is attributed by D'HERELLE to the presence of a filter-passing, ultramicroscopic living virus, which is an obligatory parasite upon the bacterial body, and is capable of cultivation only in the presence of such organisms; it undergoes no increase in ordinary culture-media. Since these facts were made known, the subject has been much broadened and all sorts of subsidiary phenomena have been brought into prominence. It has been shown that the lytic substances may be found in other situations than the intestinal contents, and that even when coming from this source they are not specific—that is, substances lytic for Shiga bacilli may be found in persons not suffering from dysentery. It has also been shown by J. DUMAS that similar substances may be obtained from earth and some waters, and by J. BORDET, also from leucocyte-containing peritoneal exudates. The interpretation of the phenomenon has been a matter of active discussion and three main explanations have been put forward. Firstly, the contagium-vivum theory of D'HERELLE; secondly, the view of T. KABESHIMA, who believes the lytic agent to be an enzyme, basing this opinion upon the fact that solutions maintain their activity for years, and also that the principle can be extracted by acetone; such an extract will initiate lysis, which can then be propagated in series. The third view is that supported by the authority of BORDET, who has sought an explanation on developmental grounds and believes that a new strain of bacteria is developed, under the conditions of the experiment, which is susceptible to autolysis, and that it is the presence of the autolytic products which causes a similar modification in subsequent generations of bacteria, thus enabling the phenomenon to be propagated; in short, that bacteria in undergoing lysis produce the environment conducive to the development of an autolytic strain. BORDET has produced the D'HERELLE phenomenon by using extracts from the peritoneal fluid of a guinea-pig which has received an injection of micro-organisms. These different views have given rise to a good deal of contentious literature; much of this is difficult to sift as the experiments adduced are by no means conclusive and the discussion occasionally degenerates into a series of formal contradictions. It has also been shown that under the influence of the lysin many cultures divide into two types, one of which transmits the lytic principle—and is BORDET'S autolytic strain—whilst the other is resistant to lysis and does not transmit the property. These strains differ from one another, and from the "normal" parent strain, in certain of their properties. There is apparently a process of selection, by which a small minority of resistant organisms are enabled to establish themselves as a true-breeding type in a culture in which they were previously swamped by a majority of the sensitive strain. These results appear similar to those of J. A. ARKWRIGHT, who by a different method of selection was able to split dysentery cultures into separate strains. As regards the phenomenon of lysis the most attractive explanation appears to be the conception of an unorganised lytic enzyme whose continued transmission may be regarded as an example of the autocatalysis; the freeing of the catalytic enzyme by the actual process of lysis, just as in the hydrolysis of an ester the acid set free serves to accelerate the reaction. The statement that the rate of the reaction increases as it proceeds falls in very well with this view. D'HERELLE,[2] in the face of all criticism, has maintained his theory of a living bacteriophagium. In reviewing the work which has been done upon this subject we are impressed by its importance from many points of view. It has certainly brought to light a type of bacteriolysis quite different from that described by PFEIFFER, and is full of suggestion with regard to immunity and therapeutics. It has long been becoming evident to bacteriologists that the ideas current in the last decade, as to the fixity of the characters by which they identify and define species, must sooner or later go by the board, to give way to a much broader conception whose limits are the limits of physiological variation, within which the characters of any given organism may change. D'HERELLE'S work exemplifies the complexity of many of the processes occurring in connexion with bacteria, and whatever the final explanation of these phenomena may be, we are indebted to him for his consistent exposition of them and for the stimulus which his views have given to bacteriological research.

[1] THE LANCET, 1915, ii., 1241.

[2] Comptes Rendus de la Soc. de Biol., 1921, vol. lxxxv., No. 30, p. 767.

Annotations.

"Ne quid nimis."

THE RESEARCH DEFENCE SOCIETY.

THE Research Defence Society was founded in 1908 with the object of enlightening the public on questions relating to animal experiment, and methods of medical research generally. The direct aim was the creation of an association which could rebut, on behalf of scientific workers, the attacks made upon physiological endeavour sometimes by individuals and sometimes by societies of apparently humane bent. It is recognised that, in most instances, the abuse is due to the kind heart of the critic as much as to his ignorance, but it has not been possible to take so urbane a view of certain persistent misrepresentations. Experiment upon animals has been successful in throwing light upon or actually combating many processes of disease, and it has been the task of the Society to distribute authoritative statements, written in language which could be appreciated readily by any intelligent lay reader, and disposing of the sinister rumours which have been prevalent for some time concerning the deeds and the personalities of working physiologists. The Society, since its inauguration, has obtained the active support of a large number of medical men, and also of many enlightened laymen, and success has encouraged it to further efforts, but closer contact with the general practitioner is very desirable. For while the medical profession is obviously in the best position to appreciate the ultimate merits of experimental work, and to realise how important it is that physiological and pathological research should be unfettered in its beneficent purposes, it is the general practitioner who can best bring this home to the public. Through the advocacy of the general practitioner a rapid extension of the work of the Research Defence Society might speedily result. While it is realised that difficulties stand in a medical man's way should he become an active propagandist, yet it is well known that many opportunities present themselves to medical men, during the course of their professional work, of influencing opinion in the right direction.

The Research Society welcomes all members of the medical profession as members or as associate members of the Society, or to associate themselves with the Society upon the following terms:—

Full membership: By subscribing to the Society 10*s.* per annum, receiving in return the published reports and pamphlets of the Society free of cost.

Associate membership: By subscribing to the Society 5*s.* per annum, and receiving in return such reports and pamphlets of the Society as are desired at cost price.

Association: By requesting the publications of the Society to be sent to them at cost price, or by requesting that there shall be sent to them, at cost price, such pamphlets as would be of particular use to them in propagating knowledge of methods used in medical research work.

A post-card will elicit further particulars from the Secretary, Research Defence Society, 11, Chandos-street, Cavendish-square, London, W. 1.

PROTEIN SENSITISATION AND BRONCHIAL ASTHMA.

AMONGST the many diseases which have been ascribed to anaphylaxis since Charles Richet's classical researches in 1902, bronchial or spasmodic asthma probably occupies the most important place. It is true that the various stages in the mechanism of sensitisation are still obscure and that we have had to fall back on ill-defined terms such as "indirect" or "secondary" anaphylaxis to bring spasmodic asthma into line with the true experimental anaphylaxis of animals. But the clinical picture of the disease, its frequent coincidence with drug hypersusceptibility, serum sickness, and the like, and, most important of all, its close resemblance to the signs and symptoms noted in anaphylaxis in animals, afford substantial evidence of a close relationship. As long ago as 1909 Auer and Lewis[1] showed that the lung of an anaphylactic guinea-pig presented changes resembling bronchial asthma in man, and since that date there has been a steady stream of research on this important subject, culminating in a long series of observations of a highly original character by Dr. I. Chandler Walker[2] and Dr. R. P. Wodehouse[3] in connexion with the Choate Research Grant in America. These researches were commenced in 1916, but the wide significance of them is only now beginning to be realised. Briefly stated, Chandler Walker has shown that if a foreign protein be inoculated into a superficial scarification of the skin in an asthmatic—and presumably sensitised—patient, an urticarial wheal may result at the site of inoculation within the brief space of half an hour. Not every foreign protein will act thus, and not every asthmatic patient is hypersensitive in this way. Some patients react to dried bacterial proteins, others to blood serums, others only to protein split products of hairs, feathers, wool, vegetables, &c. A positive reaction is regarded as an indication of abnormal protein sensitisation of the patient with that particular substance, or a split product of it. A large range of substances may be tested in one patient, and in a recent article DR. J. F. WARD[4] reports cases in which as many as 80 and 90 different protein tests were made before a positive reaction was obtained. The issue of the *New York Medical Journal* containing this article is largely devoted to protein sensitisation and contains much interesting information.

A vast field of clinical research is thus being opened up and as usual a caveat is needed. In the first place it is clearly important that the cases investigated should be unmistakable cases of true spasmodic asthma, and that other possibilities, such as pulmonary tuberculosis or renal disease, should be ruled out. A case has recently come to our notice, for example, in which a so-called asthmatic patient, after many negative tests, was found to give a positive reaction to the protein of hen's feathers and advised accordingly, but within a few weeks tubercle bacilli appeared in the sputum and the whole aspect of the case was necessarily altered immediately. Such instances will doubtless become frequent unless every clinical and pathological means of investigation are first brought to bear upon the case. Again, a large series of controls in normal persons requires to be made as soon as possible, since it is not unlikely that we may all be found hypersensitive to some protein substance or other if only a sufficiently large series of tests be made. On the experimental side also the gaps in the chain of evidence must not be lost sight of. Protein sensitisation and its mechanism are but little understood, and in the case of asthma the relationship to anaphylaxis is at present partially inferential. It may not be difficult to visualise some of the steps, at any rate, in the mechanism of a protein reaction with wind-blown pollen or ingested food, but the intermediate stages of protein infection with material from a feather pillow enclosed in a stout bed tick and a frequently washed linen pillow case are not quite so obvious. The mechanism of protein sensitisation within the bodily tissues is also a matter needing careful thought and experimental research. Is it analogous to tuberculin sensitisation on the one hand, or to the Schick test for diphtheria, with its assumption of natural immunity, on the other? And, finally, is it a matter of physico-chemical, humoral or cellular disturbance, closely allied, as in true anaphylaxis, to shock?

These and cognate questions await an answer. Meanwhile it behoves us to proceed warily. The

[1] Jour. of Amer. Med. Assn., 1909, liii., p. 458.
[2] Jour. of Med. Research, 1916–1917, xxxv., pp. 373, 391, 487, 497, 509, and 1917, xxxvi., pp. 231, 237, 243, 295, 423.
[3] Boston Med. and Surg. Jour., 1916, clxxv., p. 195, and Jour. of Immunol., 1917, ii., pp. 227, 237, and 243.
[4] New York Med. Jour., Sept. 21st.

clinical group of cases loosely called spasmodic asthma probably contains many varieties. It resembles the unsorted post-bag, and we shall be greatly surprised if the whole group yields its long held secret to any one form of specific remedy. Rather we may look to protein sensitisation to remove from the amorphous collection the one group of cases only, leaving us with a large batch still undesignated. Where the interest is so great, clinical enthusiasm is apt to overrun experimental data. This nimbleness is not a vice, but it demands watchfulness.

EPIDEMIC HICCOUGH.

TOWARDS the end of 1919, first in Austria and then in Italy, the attention of medical observers was drawn to a singular affection of short duration characterised by obstinate and inveterate hiccough, which was reported on by Economo at Vienna, Michele and Pisani at Florence, Cardarelli and Pontano at Rome. A few months later the appearance of the same affection was noticed by Dufour at Paris and by Gautier in Switzerland. The question arose whether this epidemic hiccough was a separate disease or a larval and abortive form of some more serious condition such as epidemic encephalitis or influenza. Prof. Pontano, with Dr. Trenti, made some elaborate researches on four cases under their care who were free from physical signs of any other affection and, moreover, had negative Wassermann reactions.[1] They attempted to transmit the disease to twelve other subjects suffering from various chronic affections by injecting blood *in toto*, or filtered through Berkefeld N. candles, or solution of fresh extract, and of pharyngeal washings. All the inoculations gave negative results. They distinguish this form of epidemic hiccough from that which is merely an hysterical manifestation of gastralgia and consider that it is a toxinfective disease as shown by its pharyngitis, its febrile and general symptoms and its consecutive asthenia. They point out that epidemics of hiccough have occurred in the past and discuss their relation to epidemic encephalitis and influenza, a theory maintained with much vigour by Dufour, Lhermitte, Gautier, and others. They are inclined with all due reserve to insist that no such connexion exists, that epidemic hiccough is not a myoclonic form of either of these two diseases and, moreover, does not exhibit any close epidemiological or clinical relation with them. They base their opinion on the negative results of the inoculations made by them.

FOOD AND NUTRITION IN AUSTRALIA.

THE problem of food and nutrition is engaging considerable attention in Australia, and a pamphlet summarising the essentials has been written by Dr. C. E. Corlette, surgeon to the Sydney Hospital, at the invitation of the N.S.W. Board of Trade. An examination of the climatic factor is included in this summary. The same general principles as to salt, vitamin, and protein requirements apply everywhere, but in hotter climates the caloric requirements are less, and the main question was to determine the reduction on the average of 3300 cals. adopted by the Inter-Allied Food Commission. Basal caloric requirements have not yet been measured in Sydney, but they should lie below the 1680 cals. for northern U.S.A., and above the 1290 cals. for Rio de Janeiro, or even 1090 if the lowest determination be taken. Between these places there is thus a margin of 390–590 cals. Dr. Corlette has attempted to calculate the figure for N.S.W. indirectly from the heat loss by respiration. In New York respiratory heat loss amounted to 27·7 cals., in Sydney to 21·6, in Rio to 15·8 per cubic metre of respired air in winter; 15·6, 15·9, and 11·4 respectively in summer. At a respiratory rate of 16 cubic metres per day the respiratory heat loss is 368 at New York, 302 at Sydney, 222 at Rio for the whole year: 443, 345, 253 respectively in winter; 249, 254, 182 in summer. The annual difference between New York and Sydney is thus 66 cals. per day; but actually it is more, since summer and winter are not of equal duration, the advantage being with Sydney, which has shorter winters. The main heat loss by the body is through the skin, and it has been determined that the respiratory loss is 11–12 per cent. of the total. The total difference will thus be eight to nine times as great—i.e., over 500 cals. The average caloric requirement for Australia will therefore be 2800. A preliminary investigation by Dr. H. S. H. Wardlaw from analyses of the actual food consumption of five women and four men workers in the laboratory—i.e., individuals performing light work—gave 2110 cals. for the men and 1977 cals. for the women per day. The protein consumption was 71·2 g. for the men and 58·9 g. for the women. These figures become 2321 for men and 2175 for women, with 78·3 and 64·8 for protein, if the usual allowance of 10 per cent. be allowed for loss by waste. They correspond fairly closely with the estimate of Dr. Corlette, remembering that these individuals were performing light rather than average work. Prof. H. G. Chapman (in another pamphlet) considers that most men in Australia perform hard work during the day, and advocates 5000 cals. for the food purchased so as to allow for waste, which often amounts to over 25 per cent. Even this allowance gives a much larger caloric requirement than the calculations by Corlette indicate. The allowance for women was estimated at 2500 cals. Australians are big meat eaters, though the consumption of meat has lessened since the war. The use of proteins to supply calories beyond the 80 g. daily requirement for maintenance and growth is wasteful, since great loss occurs during utilisation due to specific dynamic action. This action is illustrated by considering the case of a starving man burning from his own stores 100 cals.: a quantity of protein yielding 100 cals. does not suffice to replace the loss. The giving of food raises the metabolism, like poking a fire; combustion proceeds at a greater rate, and both food and stored-up fuel are burnt. The output is balanced by 140 cals. from protein, 114·5 from fat, or 106·4 from sugar. In other terms specific dynamic action causes a loss of 30·9 per 100 cals. from protein, 12·7 from fat, and 5·8 from sugar. Carbohydrate is thus the best fuel for the body. Muscular work makes no appreciable extra consumption of protein, and either carbohydrate or fat best supply the calories. Carbohydrate, if amply provided, also reduces the protein consumption.

DUODENAL DIVERTICULA.

IN a paper[1] read before the Section on General and Abdominal Surgery at the recent meeting of the American Medical Association, Dr. E. Wyllys Andrews, of Chicago, states that our knowledge of duodenal diverticula falls naturally into two periods. The first, or necropsy period, extends from 1710, when Chomel first described the condition, to 1910, during which it was regarded as a rare and interesting anatomical deformity, while in the second, or Roentgen ray period, from 1910 to 1917, clinical evidence pointed to those diverticula being important factors in the syndrome of gastro-duodenal ulcer. Dr. Andrews adds that to this period, or perhaps to a coming third period, belongs the evolution of the operative cure of the condition. Buschi, of Bologna, in 1911 compiled 54 examples of duodenal diverticula, including three of his own, with a list of 62 previous authors. Duodenal diverticula are acquired rather than congenital deformities, as they belong mostly to the later half of life. The importance of age in the ætiology is shown by the fact that the youngest patient in Linsmayer's series of 45 cases was 36. The diverticula are usually single and most frequently situated near the papilla of Vater. Their direction varies, being forward, backward, upward, or downward in different

[1] Il Policlinico, xxviii., Practical Section, August 29th, 1921.

[1] Journal of the American Medical Association, Oct. 22nd, 1921.

cases. They commonly measure from 0·5 to 0·3 cm. in diameter. The deformity ranges from slight kinks or angulation of the tube caused by dragging or outside pressure to total obliteration. Dr. Andrews is of opinion that this duodenal deformity is a very constant feature of medical and surgical diseases of the upper abdomen, and that pouches and diverticula form a constant if small proportion of those deformities. Some of these defects are only apparent owing to outside pressure, spasticity, or temporary exudate round callous ulcers. Some are transient and relieved by medical treatment. A residue of permanent structural deformity is found and of this number a small minority have actual pouches which require operation.

ANTITETANUS IMMUNISATION.

IN certain parts of this country tetanus is so prevalent among horses that it is the custom for veterinary practitioners to inject a dose of antitetanic serum before performing any cutting operation upon a horse, and, in the case of an accidental wound which has come in contact with the ground, to inject serum as a matter of routine. In such districts it would be an immense gain to the owner and breeder if he could confer upon foals and young stock an early and lasting immunity against tetanus. The paper read on Nov. 15th[1] before the Pathological Section of the Royal Society of Medicine by Mr. J. B. Buxton, F.R.C.V.S., and Mr. A. T. Glenny, B.Sc., assumes, therefore, an aspect of practical importance. Five hundred horses tested by them gave no evidence of possessing any antitoxic immunity. An injection of tetanus toxin containing 20 test doses over-neutralised with antitoxin was administered thrice at intervals of three days. A month later the horse so immunised was found to tolerate a quantity of toxin exceeding 2000 guineapig-lethal doses and probably equal to several hundred minimum horse-lethal doses. Had these facts been available previous to the war, no doubt they would have been applied to the saving of the lives of many valuable horses. The duration of the immunity conferred remains to be accurately determined, but should the method prove, on further trial, to be a safe preventive against tetanus, it might be expedient so to immunise every horse in the kingdom. The collateral question will then arise whether the same method can be applied to prevent accidental tetanus in the human subject.

PROF. FRANKL IN DUBLIN: CURRENT GYNÆCOLOGICAL PROBLEMS.

THE Dublin School has long been distinguished for its broad outlook on diseases of women, and the recent visit of the distinguished Viennese professor of gynæcology, Dr. Oscar Frankl, in response to an invitation from the Royal Academy of Medicine in Dublin, was part of a lively interchange of thought with Continental medicine. Prof. Frankl delivered a series of lectures, one of which dealt with the interrelationship between menstruation and ovulation, a subject of great interest, upon which our knowledge is still far from perfect. He began by pointing out that the functions of the female genital glands can continue regularly and satisfactorily only if the balance between the different ductless glands is maintained. The disappearance or the hyperfunction of a gland immediately produces a disturbance in the physiological balance, which has been termed dyshormonia. Seitz has happily compared the effect to the constituent parts of an orchestra which are not in tune. Faulty playing on the part of one performer produces a discordant effect upon the whole. The cyclic changes in the uterus which accompany menstruation are produced by the effect of the internal secretion of the ovary, and this organ in its turn is maintained in a proper condition of function by the secretions of all the other ductless glands of the body. Frankl believes that the ovum and the corpus luteum are the most important hormone-producing tissues in the ovary, and that the onset of menstruation marks the death of the ovum. When the ovum lives and becomes embedded in the mucosa of the uterus then the corpus luteum persists, and menstruation does not take place. The result of exact histological study has demonstrated that the follicle ruptures about the fourteenth to the sixteenth day from the end of the last menstrual period, and that menstruation and ovulation do not coincide as was taught by Leopold and others. Thus it would appear that the corpus luteum prepares the uterine mucous membrane for the reception of the ovum, and that the involution or death of that body produces the hæmorrhage of the menstrual period. The apparent contradiction that the same secretion produces first hyperæmia of the endometrium, and that then its absence produces the menstrual bleeding, is explained by Frankl as follows. During the premenstrual stage the glands of the uterine mucous membrane are distended with secretion which contains a tryptic ferment, while by the swelling of the mucosa the mouths of the glands are more or less closed. When the corpus luteum begins to involute the hyperæmia subsides, the swelling diminishes, and the contents of the glands escape. The tryptic ferment then produces a more or less extensive digestion of the mucosa and consequent bleeding, and it is the presence of this tryptic ferment which accounts for the non-coagulability of the menstrual blood. It is interesting to note that Frankl does not believe in the presence of an interstitial ovarian gland in a sexually mature woman, and maintains that at present we have no proof of its existence or of its function.

In another lecture Prof. Frankl dealt with the method of treating cases of malignant disease by the action of X rays or radium, a subject which is attracting as much attention at Vienna as it is in Dublin. Such extravagant hopes have been excited in the minds of many by the reports of successes obtained by one or other of these methods that an impartial review of the results to be expected is of particular value. The chief defect of radium is its very limited area of action, which does not extend probably more than 4 c.cm. from the centre of the tube. Its effectiveness further decreases in ratio to the distance, and the peripheral portions of a tumour may therefore not only receive a dose which is insufficient to destroy the cancer cells, but even a dose which has the effect of acting as a stimulus to the cells and causing rapid proliferation and early metastasis. The ideal treatment is one which exposes all the cells within the radius of the rays to the same quantity and quality of rays. All the cells of the body are sensitive to the X rays or radium, and especially cancer cells and the specific cells of the ovary. It is therefore possible by the use of certain qualities and quantities of rays to destroy not only tumour cells, but also the follicles of the ovary without any harm to the surrounding tissues. The difficulty of the treatment lies in the fact that it is impossible to expose all the cells of a cancer mass of a certain thickness to the proper dose, and not to apply a dose which has the effect of only provoking stimulation and proliferation or of destroying the health-surrounding tissues. To produce such a result it is necessary to use the hardest rays obtainable. In an endeavour to obtain better results than the very unsatisfactory ones which accompany even the most radical operative procedures in the treatment of cancer of the neck of the uterus gynæcologists have perhaps expected too much from the use of X rays and radium. As Frankl points out, there is no excuse for abandoning the knife in favour of such treatment, but a combination of the two methods promises to give better results than either alone, and it is particularly important to subject cases operated upon to subsequent treatment with one or other of these methods. It is undoubtedly true that in a small percentage of cases ray treatment may render an inoperable case operable, or may even bring about its cure, a sufficient number of such

[1] THE LANCET, Nov. 26th, p. 1109.

cases having been recorded to establish this fact beyond dispute. Seven of 42 cases of inoperable cancer of the cervix have been cured in Frankl's clinique, while he reports that 58·8 per cent. of cases subjected to ray treatment subsequent to operation have remained well after a period of five years. In the treatment of hæmorrhage from the uterus due to the presence of myomata or unconnected with obvious signs of disease the rays act upon the follicular elements in the ovary, and by destroying these bring about a cessation of the ovarian secretion and so produce amenorrhœa. Just as small doses may have a stimulating effect upon the cells of a malignant growth, so they may stimulate the follicular epithelium of the ovary, and it has been suggested therefore that they might be employed in the treatment of obstinate amenorrhœa.

Both these lectures are included in a very full report which appears in the *Dublin Journal of Medical Science* for November.

JUBILEE OF THE FINSEN INSTITUTE.

A FEW weeks ago the Finsen Institute in Copenhagen celebrated a double event—its 25-year jubilee, and the opening of an annexe for the light treatment of surgical tuberculosis. Some conception of the size and importance of this Institute can be gleaned from the following figures. The staff includes 22 doctors, 168 nurses, and 84 other employees; the annexe for surgical tuberculosis has cost three million kroner, accommodates 145 in-patients, and is equipped for the daily treatment of 150 patients. Niels Finsen's hope that light treatment could be extended to deep-seated disease, notably heart disease, was not realised in his life-time, but his successors have kept his aims in view, and in 1913 they began that treatment of surgical tuberculosis with carbon arc light which has now come into general use at the Institute.

PLAGUE AND SMALL MAMMALS.

PLAGUE was imported into coastal towns of South Africa many years ago, but as little or no manifestation of the disease was reported for some years, it was hoped that the infection had died out. Quite recently an entirely new series of outbreaks have been occurring inland and far remote from towns. In his interesting paper in our last issue, Dr. L. G. Haydon, assistant health officer for the Union of South Africa, set out clearly the peculiarities of these outbreaks—viz., (1) they were confined to a scattered rural population; (2) no "domestic" rats could be found in the farms; and (3) the time-intervals between the small groups of cases showed that they were not closely connected to each other. These new manifestations could not at first be brought into line with the ordinary epidemiology of plague, which requires flea-infested rats living in the same house with human beings; consequently it was necessary to look round for some other agent in disseminating the disease. After long and careful investigation into the fauna of the infected parts of the country it was discovered that two varieties of smaller mammals, which lived in numbers in the fields, were extensively infected with the disease—namely, the gerbille (*Tatera lobengulæ*) and the multimammate mouse (*Rattus coucha*), animals living in close contact with each other and the commonest of the animals captured for identification. The human cases of plague were confined to people who lived in the open and followed an agricultural or pastoral occupation: in one case a history was elicited of having taken meals sitting on the ground riddled with burrows of these animals.

Dr. Haydon's short communication is of great importance. It shows that the chain of infection to the human being is in reality the same in both town and country; in the latter case two small rodents, very similar in habit to the field-mouse, are the responsible agent for disseminating the virus; in the town, the "domestic" black and grey rat perform this function. Similar epidemics have been reported from other parts of the world. In the early part of this century there was an epizoötic of plague amongst field rodents in Essex followed by a few human cases. In India outbreaks have occasionally been reported amongst field-mice on the threshing floors around infected villages. Comparatively little is known about the extent and duration of these outbreaks amongst field-rats, but in the light of recent work done by Kunhardt and Chitre it is safe to say that provided climatic conditions are favourable for flea-breeding and the mean temperature does not remain for long below 50° F., the disease will be kept alive by the abortive epizoötic that occurs at the commencement of the colder weather. In these conditions the disease will spread like an ulcer, healing in the middle but always creeping further afield at the edges. When the non-spreading or quiescent period of the year (presumably the cold weather) approaches, active manifestation will remain in abeyance, but will commence again where it ceased as soon as favourable climatic conditions return. Dr. Haydon points out that any measures for getting rid of these small mammals are extremely difficult to carry out; the best results have, he says, been obtained with carbon bisulphide. We would point out that no measure yet designed for the extermination of rodents is anything like so satisfactory as the epizoötic of plague itself. Taking into account the scattered nature of the population, the right course would appear to be (1) to warn the people of the danger of sitting about on the ground, particularly if rat-burrows are plentiful; and (2) to push the ordinary inoculation against plague in order to save the lives of the human beings who, in spite of warning, expose themselves to the danger of infection in the course of their daily work. Whether or no the disease will die out amongst the small mammals of the countryside depends largely on climatic conditions of which our knowledge is very incomplete.

ANTIHÆMORRHAGIC SERUM.

IT is a characteristic peculiar to medical discoveries that they nearly always have their origin in some chance clinical observation. To this MM. Dufour and Le Hello owe the discovery of an antihæmorrhagic serum which they have named "Anthema" which they credit with a hypercoagulant property, particularly rapid and responding to the most urgent and serious requirements which are so constantly met with in medical and surgical practice. In a communication to the *Progrès Médical* of July 16th, 1921, they relate the case of a young woman admitted into the Broussais Hospital with purpura hæmorrhagica, epistaxis, and gingival and uterine hæmorrhages. The usual antihæmorrhagic remedies were applied without success. She had in particular several injections of antidiphtheritic horse serum which seemed without effect, when some days after the last injection the temperature rose suddenly to 40° C., and a generalised erythema made its appearance. At the same time the hæmorrhages ceased. Five days later they recurred and another injection of the serum was given, followed by fresh local reaction, urticarial eruption, and rise of temperature. At the same time, as in the first instance, the hæmorrhages stopped, but this time permanently. These facts led the authors to think that the voluntary production of these phenomena would be able to give rise to a well-defined humoral property—namely, hypercoagulability. Its realisation, however, seemed difficult. To obtain such an immediate effect as is necessary in hæmorrhages, it is not a question of the direct development in the patients of an anaphylactic state by excessive injection of serum, since it is well known that anaphylactic sensitisation requires a certain period of incubation for its production. But the patients can profit by the advantage that can be obtained from passive anaphylaxis by the injection of serum from a sensitised animal. Anthema is the serum of rabbits which have had, at intervals which have been regulated by experience, several very small successive intravenous injections of horse serum. The animals are bled 21 days after the first injection.

being the time necessary for an effective sensitisation. Their serum injected into a guinea-pig immediately caused a marked hypercoagulability in the blood of this animal and produced the same property in man. This property renders the serum applicable to every kind of hæmorrhage, including that due to various blood dyscrasiæ and as a preventive in surgical intervention in parts liable to bleed or in hæmophilic patients; it may be used in doses of 10–20 c.cm. subcutaneously. There are no special contra-indications, and serum disease is exceptional and never severe. In healthy subjects in whom the blood coagulability was previously estimated by MM. Dufour and Le Hello, it was found that this was markedly increased after injection; and they are furthermore of opinion that the factor of increased blood coagulability may enter into the explanation of some of the hitherto unexplained phenomena of shock. In conclusion, 11 cases are cited by the authors of hæmorrhage after abortion, from uterine and vesical cancer, at the menopause, in hæmophilia, melæna and hæmatemesis in which the injection of this serum was followed by marked and immediate benefit.

INTESTINAL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM.

TWO cases of this unusual condition were reported in October. Surg.-Captain M. L. B. Rodd, R.N., details[1] a case of intestinal obstruction in a boy of 17 whose appendix had been removed six months before. A large intussusception, starting 2 inches from the ileo-cæcal junction, was found at the operation; and when this was unravelled a diverticulitis was found, about 18 inches higher up, and this also was intussuscepted. The diverticulum was removed, recovery being uninterrupted. Another case is mentioned in which the condition, diagnosed as appendicitis, proved at operation to be a diverticulitis.——Major Dean F. Winn, Medical Corps, U.S. Army, gives an account[2] of a still more curious example of this condition. A soldier of 19 was being operated upon for appendicitis on Nov. 9th, 1920, and it was found difficult to bring the inflamed appendix up into the wound owing to a dense peritoneal band which held down the ileum. With difficulty the band was traced upwards and was found attached to the blind end of a Meckel's diverticulum 8 inches long. As the patient now began to suffer from shock, the diverticulum was not removed. The patient subsequently refused further operation, though warned of his risk, and he was discharged to duty on Nov. 26th. He was readmitted at 3 A.M. on the next day, Nov. 27th, again suffering from intestinal obstruction, and at the second operation, that evening, a band of omentum was found attached to the tip and side of the diverticulum, incarcerating several loops of dusky and distended bowel. This time the diverticulum was removed. Convalescence was normal. Each of these authors quotes a paper in the *Annals of Surgery* for May, 1921, by Coley and Fortune, who had only been able to find in the literature since 1917 16 cases of intestinal obstruction by Meckel's diverticulum.

POST-GRADUATE COURSES ROUND BRISTOL.

THE committee in charge of post-graduate study in medicine in the University of Bristol, encouraged by the success achieved in courses of demonstrations held recently in several country centres, is proposing to extend its activities by arranging for similar courses in other towns in the south-west of England. In rural areas with cottage hospitals, University lecturers undertake all these demonstrations, a course consisting, as a rule, of six. For towns of larger size, with hospitals of 100 beds, the University offers several alternative plans: (1) To conduct a course similar to those arranged for smaller centres, in which all the demonstrations are given by the University "team"; (2) to undertake nothing but the organisation and the advertisement, the course itself being given by members of the local hospital staff; (3) to combine the two schemes by making the University team responsible for some demonstrations, the remainder of the course being undertaken by the local hospital staff. Prospective centres are invited to appoint a local secretary to whom, or to the director of post-graduate studies, each practitioner attending the course pays a fee of two guineas, to cover the cost of postage, advertisement, and travelling; should there be any balance, an honorarium will be handed to the lecturer. A list of subjects is offered to the group who select a series of six. In the courses already held one demonstration has been given per week, the subjects being the treatment of fractures, the uses and preparation of vaccines, and recent work in cardiac disease. To each of these two demonstrations have been devoted. For the courses which it is hoped may be held next spring, a much wider choice is offered, including various aspects of surgery, medicine, gynæcology, ophthalmology, and so on. A synopsis of each demonstration that is offered for selection is given, and the group is thus able to find what is most likely to satisfy its needs. The advantage of such courses to the country doctor, who finds it difficult to leave his practice for more than a day at a time, is obvious. It is to be hoped that this kind of work will be widely undertaken, not only in the south-west of England, but also throughout Britain by the appropriate universities. To this end inquiries as to procedure will be welcomed; they should be addressed to the Director of Post-graduate Studies, Department of Pathology, University of Bristol.

TREATMENT OF SCARLET FEVER WITH IMMUNE HUMAN SERUM.

TREATMENT of patients suffering from an acute infectious disease with the serum of convalescents has been widely used in the United States and in Germany, particularly in the cases of scarlet fever and measles, but has not to our knowledge been employed in this country. The present extensive epidemic of scarlet fever in London should afford plenty of opportunities of testing the value of this new method. In a recent paper read before the Chicago Society of Internal Medicine, Dr. G. H. Weaver,[1] of the Durand Hospital of the John McCormick Institute for Infectious Diseases, reports his observations on 54 cases of scarlet fever treated by convalescent serum. All the cases were severe, 38 being of the toxic type, 6 being characterised by septic complications, and 10 showing a combination of toxic symptoms and septic complications. Only two deaths occurred, one in the toxic and the other in the septic group. In neither case was any appreciable benefit derived from the serum. The blood was taken during the fourth or early in the fifth week of the disease, only those being chosen as donors who were free from any suspicion of tuberculosis, whose blood gave a negative Wassermann reaction, and who had had a typical attack of scarlet fever without complications; 200–300 c.cm. were taken from adults, and proportionately less from bigger children. After the serum had separated from the clot it was drawn off, mixed with serum from two or three other patients, and 0·3 per cent. of tricresol added. Cultures were then made from the mixture which, if sterile, was placed in small bottles of 30 c.cm. capacity and kept in a refrigerator till it was used. The serum was injected intramuscularly in doses of 60–90 c.cm., half the amount often being injected into each thigh. Intravenous injections were sometimes used, but did not present any advantages over the other route. If no obvious improvement occurred a second injection was given after 24 hours. Beneficial effects, however, following

[1] Journal of the Royal Naval Medical Service, October, 1921, p. 314.

[2] Military Surgeon, October, 1921, p. 464.

[1] Journal of the American Med. Assoc., Oct. 29th, 1921.

the injection occurred with great uniformity. Improvement in the general condition out of proportion to the change in the temperature curve was the most striking phenomenon. Two or three hours after the injection the temperature began to decline, the fever sometimes terminating by crisis.

RHODESIAN MAN.

EXPERTS have long differed as to whether the remains found in the Mousterian period and the various skeletons known as the Heidelberg man, the Piltdown man, and pithecanthropus are more or less in the direct line of descent of present-day man from the higher apes, or whether they count as offshoots from the human stem which did not mature. At a recent meeting of the Ulster Medical Society, which we briefly report, Prof. T. Walmsley emphasised the point of view that all these earlier types are more divergent among themselves than present-day human races and should rank as different species. Further light on the question may be expected when the precise systematic position has been determined of the skull unearthed by Mr. W. E. Barren last summer in a Rhodesian cave and now in the British Museum. In *Nature* for Nov. 17th Dr. A. S. Woodward, F.R.S., sets out the points in which this skull resembles and differs from those of other prehistoric findings. Its general appearance is strangely similar to that of the Neanderthal man, the large and heavy face being even more simian in appearance; the median longitudinal ridge shows an affinity to that found in pithecanthropus although much larger; the great flat maxillaries resemble those of the La Chapelle skull; the narial openings run down upon the face as in the gorilla, while the anterior nasal spine is typically human. The position of the foramen magnum gives reason to postulate an erect attitude, and the portion of the tibia found does not differ essentially from that of a tall and robust modern man. The fact that at first sight the dentition appears to be affected with caries makes this Rhodesian man very modern indeed. But these and many other points remain to be cleared up by discussion at the Anatomical Society of Great Britain and Ireland.

THE MEDICAL DIRECTORY.

THE Medical Directory for 1922, which has just reached us, is the seventy-eighth annual issue, and appears a week earlier than it did last year. The numerical summary of the medical profession on page 37 shows that the number of names in the London area is practically stationary, while there is an increase of 21 names in the Provincial section and much more considerable additions under the headings of Wales, Scotland, Ireland, Abroad, and the Services. The total number of names in the Directory is now 45,586, as against 44,926 last year—an increase of 660. A useful addition is the list of honorary secretaries of the statutory local medical and panel committees which appears on pages 33 to 35. The volume, though large, is handy and convenient, and the information it contains is not only accurate, but arranged with taste and a sense of proportion. The price of the Directory is 36*s.* net.

THE Thomas Vicary Lecture will be delivered at the Royal College of Surgeons of England next Thursday, Dec. 8th, by Sir Charles Ballance, who has taken as his subject A Glimpse into the History of the Surgery of the Brain.

A SOCIAL evening will be held at the Royal Society of Medicine on Wednesday, Dec. 7th, at 8 P.M., when the President of the Society and Lady Bland-Sutton will receive Fellows and their friends. At 9 P.M. Sir Berkeley Moynihan will deliver a short illustrated address on Medicine in Art.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, NOV. 22ND.

THE address delivered by the President was reported in last week's issue of THE LANCET. At its conclusion a vote of thanks to the President was carried by acclamation. The PRESIDENT then read a letter from Mr. Norman Bennett, formally tendering his resignation as a member of the Council.

Dental Education and Examination Committee.—Mr. Dolamore, Mr. Gilmour, and Mr. Guy were appointed additional members of the committee until the next election of the committee.

Dentists Act, 1921.—The Council proceeded to appoint three members, one from each of the English, Scottish, and Irish branches, to be members of the Dental Board of the United Kingdom; Mr. Waring, Sir James Hodsdon, and Sir Arthur Chance were appointed. On motions put from the chair, it was agreed (1) that the business of the Council arising out of the Dentists Act, 1921, be delegated to the Dental Executive Committee until the next session of the Council in May, 1922; (2) that Mr. Dolamore be appointed a member of the Executive Committee for Dental Business, and that the committee so constituted be the Dental Executive Committee under the Dentists Act, 1921.

Restoration of Names to the Medical Register.—The Council then deliberated on certain items of business in camerâ. Strangers having been readmitted, the PRESIDENT announced that the Registrar had been directed to restore to the Medical Register the names of Nariman Hormasji Clubwala and Thomas Stancy Sharpley.

Penal Cases.

The Council then proceeded to the consideration of penal cases.

The Case of Clement Thomas Cory Kingdon.—The Council considered the case, adjourned from May 24th, of Clement Thomas Cory Kingdon, registered as of 62, Falcon-road, Clapham Junction, S.W., M.B., C.M., 1893, M.D. 1905, U.Edin., who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you, on Feb. 7th, 1921, signed and gave to one W. McKernon, ex-member of the Australian Imperial Force, a certificate dated Feb. 5th, 1921, that the said W. McKernon was suffering from influenza, and was at present (i.e., on Feb. 5th, 1921) unable to travel, whereas you had neither seen nor examined the said W. McKernon on Feb. 5th, 1921, or at all before Feb. 7th, 1921; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainants were the Australian Imperial Force, represented by Major E. W. Morris.

At the conclusion of the case the PRESIDENT announced the decision of the Council as follows:—

I have to inform you that the Council has found that the facts which were alleged against you in the notice of inquiry . . . . have been proved to its satisfaction, but that the Council has taken into consideration the evidence as to your previous good character and your assurance that the certificate was given without due care and thought. In order to give you an opportunity to rehabilitate your character and to prove to the Council that you realise the gravity of your offence, the Council has postponed judgment till the November session, when you will be required to attend and to produce evidence from your professional brethren regarding your conduct, and in particular in regard to your practice in the giving of certificates. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren who may be willing, upon written application from the Registrar, to testify, by letter addressed to him for the use of the Council, as to your character and conduct in the interval. You will receive, in due course, a formal written intimation of what I have just announced to you, and the intimation will specify the dates to which I have referred.

Dr. Kingdon attended in answer to his notice. He was not accompanied by counsel or solicitor. The Australian Imperial Force, the complainant, was not represented, but Major Morris, its representative at the hearing in May, having seen the evidence as to

Dr. Kingdon's character, had expressed himself satisfied with it. The Council's solicitor, having briefly recapitulated the facts, read letters as to Dr. Kingdon's character in the interval from Dr. J. C. Johnston Acres, Dr. Louis C. Bean, Dr. P. R. Dodwell, and Dr. James Smyth. Dr. Kingdon expressed his regret, and gave an undertaking in regard to his future conduct in relation to certificates. The Council's solicitor did not desire to address the Council in reply. No member of the Council desired to put any question to Dr. Kingdon through the chair. The Council having deliberated on the case in camerâ, the PRESIDENT announced the judgment of the Council as follows:—

I have to inform you that the Council has considered the evidence as to your conduct during the interval which you have tendered and has resolved: "That it does not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Nathaniel Stevenson.—The Council considered the case of Nathaniel Stevenson, registered as of The Phœnix, Rainham, Essex, M.B., C.M., 1893, U.Glasg., who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you abused your position by committing adultery and eloping with Mary McArtney, a married woman, you having been the medical attendant of the family, of which adultery you were found guilty by the decree of the Court of Session, Edinburgh, dated May 28th, 1921, in the case of George McArtney or Macartney *v.* Mrs. Mary Lugton or McArtney and Dr. Nathaniel Stevenson, in which you were the co-defender; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

There was no complainant in this case. Dr. Stevenson was not present in answer to his notice, nor was he represented by counsel or solicitor. The Registrar having read the notice, in the absence of a complainant the solicitor placed the facts before the Council. He proved the service of the notice and read a certified copy interlocutor which he put in in the case of George McArtney or Macartney against Mrs. Mary Lugton or McArtney, in which Dr. Stevenson was co-defender, and an account of the proceedings at the Court of Session from the *Glasgow Herald*, dated May 30th, 1921, and certified copies of the notes of evidence given at the hearing, which he also put in. This closed his case.

The Council having deliberated on the case in camerâ, the PRESIDENT announced the judgment of the Council as follows:—

I have to announce that the Council has considered the charge made against Nathaniel Stevenson, and that it has judged him to be guilty of infamous conduct in a professional respect, and has directed the Registrar to erase his name from the Medical Register.

The Case of Alexander McRobbie Donaldson.—The Council considered the case of Alexander McRobbie Donaldson, registered as of Inglewood, Briercliffe, Burnley, M.B., Ch.B. 1905, U.Aberd., who had been summoned to appear before the Council on a charge amended by assent of the Council to the following terms:—

"That, being a registered medical practitioner, you, on March 24th, 1921, signed and gave to one Arthur Baldwin a certificate stating that you had that day examined the said Arthur Baldwin, Mrs. Arthur Baldwin, Mrs. Leaver, Harold Leaver, and Arthur Leaver, and found them in good health and sound mentally and bodily and likely to remain so, whereas you had in fact made no examination whatsoever of the said Arthur Baldwin, or Mrs. Arthur Baldwin, Mrs. Leaver, Harold Leaver, and Arthur Leaver, which certificate was untrue, misleading, and improper; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

Dr. Donaldson attended in answer to his notice, accompanied by Mr. Alexander Neilson, K.C., instructed by Messrs. Hempson, solicitors.

There was no complainant in this case, but it was brought to the Council's notice by the Senior Medical Officer of the Australian Imperial Force. In the absence of a complainant, the Council's solicitor then proceeded to place the facts before the Council. He called Major Morris, A.I.F., as a witness, and examined his as to the truth of his declaration. Major Morris and a colleague, Dr. E. W. Evans, had examined Baldwin at Tilbury as he was about to embark for Australia and had dissuaded him on grounds of physical unfitness from proceeding with his journey. Major Morris was cross-examined by Mr. Neilson. The Council's solicitor did not desire to re-examine Major Morris, who answered questions put to him through the chair by members of the Council. The Council's solicitor next called Dr. Ernest W. Evans, Senior Medical Inspector of the Marine Department of the Board of Trade, and examined him as a witness. Dr. Evans was cross-examined by Mr. Neilson, re-examined by the Council's solicitor, and answered questions put to him through the chair by members of the Council. Mr. Stanley Hamilton Foss, assistant manager of the Orient Line, was also examined as a witness. This closed the case against Dr. Donaldson.

Mr. Neilson addressed the Council on behalf of Dr. Donaldson. He read letters from the Registrar to Dr. Donaldson, dated August 18th, 1921, and Dr. Donaldson's replies thereto, dated Sept. 8th and 9th and Oct. 13th, 1921. He called Dr. Donaldson and examined him as a witness on his own behalf. Dr. Donaldson was cross-examined by the Council's solicitor, and answered questions put to him from the chair, and by members of the Council through the chair. Mr. Neilson did not desire to re-examine Dr. Donaldson. Mr. Neilson read testimonials as to character from Dr. Herbert Edmundson, Burnley, enclosing a resolution passed by the Burnley branch of the British Medical Association; from Dr. Andrew MacGregor Sinclair, ex-Mayor of Burnley; from Mr. R. Allan Baxter, clerk to the Burnley Insurance Committee; from Mr. William Clitheroe, district superintendent of the London Mutual Assurance Society, Limited, Burnley Branch; and from Mr. John William Clegg, L.S.A., of Burnley, which he put in. This closed his case. The Council's solicitor did not desire to address the Council in reply. The Council then deliberated on the case in camerâ, and subsequently adjourned.

WEDNESDAY, NOV. 23RD.

After the Council had continued its deliberations in camerâ on the case of Alexander McRobbie Donaldson, the PRESIDENT announced the judgment of the Council as follows:—

I have to inform you that the Council has given very careful consideration to the charge brought against you and to the evidence produced in support of it, and has found that the facts alleged against you, as indeed you yourself have acknowledged, have been proved to its satisfaction, and that the certificate in question was given, in your own words, in a "lax and careless" manner. The Council regards laxity in the giving of such a certificate as a very grave matter, and worthy of severe censure; it has resulted, as has been shown in this instance, in consequences injurious to the persons to whom the certificate is given, and to others. The Council, having regard to your previous good character and to the warning which you have received during the course of these proceedings, trusts that your conduct as touching certificates will in future be beyond reproach; and it has accordingly not seen fit to direct the Registrar to erase your name from the Register.

Dr. Donaldson thereupon gave an undertaking to the Council as to his future conduct in the giving of certificates.

The Case of Nariman Bejanji Kolsa-Walla.—The Council considered the case of Nariman Bejanji Kolsa-Walla, registered as c/o Grindlay and Co., 54, Parliament-street, S.W. 1, L.M.S.U. 1910, Bombay, D.P.H. R.C.P.S. Eng. 1914, who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients in the villages of Rainworth and Blidworth, Nottinghamshire: (1) by personal visits to and/or interviews with persons who were to your knowledge panel patients of Nowroji Merwanji Tarachand, a registered medical practitioner; (2) by offering to charge a lower fee for confinements than the charge made by the said Nowroji Merwanji Tarachand; and (3) by personal attendance at a meeting held at the Wesleyan Schools, Blidworth, when those present were asked to put their names on your panel list, and forms of notice to change

doctors to yourself were distributed, and that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainant was N. M. Tarachand, M.R.C.S., L.R.C.P., 1893. Dr. Kolsa-Walla attended in answer to his notice, accompanied by Mr. Norman Birkett, his counsel, instructed by Mr. E. B. Hibbert, his solicitor. Dr. Tarachand, the complainant, was accompanied by Mr. E. Huntsman, of Nottingham, his solicitor.

The Council's solicitor having read the notice, Mr. Huntsman proceeded to open the case for the complainant. After reading a letter from Dr. Kolsa-Walla to Dr. Tarachand, he called seven residents of the village of Blidworth and examined them as witnesses; these witnesses were in turn cross-examined by Mr. Birkett, and some were re-examined and questioned from the chair and by the legal assessor, also answering questions addressed through the chair by members of the Council.

Mr. Huntsman then called Mr. Nelson Frank Bayliss, clerk to the Nottinghamshire Insurance Committee, and examined him as a witness. He was also cross-examined by Mr. Birkett, and answered questions put to him, through the chair, by members of the Council. This closed the case for the complainant.

Mr. Birkett addressed the Council on behalf of Dr. Kolsa-Walla. He read a testimonial as to Dr. Kolsa-Walla's character from Mr. M. R. Saunders, L.R.C.P., of Hucknall, Nottingham, which he put in, together with other medical testimonials which he did not read. He also read and put in a statement from 77 panel patients who had transferred from Dr. Tarachand to Dr. Kolsa-Walla. The further consideration of the case was postponed, and the Council adjourned.

THURSDAY, NOV. 24TH.

The Council continued its consideration of the case of Nariman Bejanji Kolsa-Walla.

Dr. Kolsa-Walla attended, accompanied by Mr. Bertram Long, his counsel, instructed by Mr. E. B. Hibbert, his solicitor. Dr. Tarachand, the complainant, was accompanied by Mr. E. Huntsman, of Nottingham, his solicitor. Leave having been accorded by the Council, Mr. BAYLISS made a statement correcting certain statistics as to transfer of panel patients that he had given the previous day.

Mr. LONG then called Dr. Kolsa-Walla as a witness on his own behalf, and examined him as to the truth of the particulars set out in his statement of defence. Dr. Kolsa-Walla was cross-examined by Mr. Huntsman, and re-examined by Mr. Long. He answered questions put to him by the Legal Assessor and from the chair. Mr. Long next called Mr. Arthur Tyler, insurance agent, and four other witnesses, all of whom he examined as witnesses. They were then cross-examined in turn by Mr. Huntsman; several also answered questions put from the chair, by the Legal Assessor, and by members of the Council through the chair. This closed the case for Dr. Kolsa-Walla. Mr. HUNTSMAN addressed the Council in reply. This closed his case.

The Council having deliberated on the case in camerâ, the PRESIDENT announced as follows:—

I have to inform you that the facts alleged against you in the notice of inquiry have been proved to the satisfaction of the Council; that the Council is of opinion that the practice of advertising and canvassing is contrary to the public interest and discreditable to the profession of medicine; that the Council takes a very grave view of such practices, but that, having regard to your comparative inexperience, it is prepared to give you an opportunity to prove that you are capable of more worthy conduct in the future, for which purpose it has postponed judgment till the November Session, 1922, when you will be required to attend and to produce evidence from your professional brethren regarding your conduct in the interval. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren in the neighbourhood of your practice who may be willing, upon written application from the Registrar, to testify, by letter addressed to him for the use of the Council, as to your character and conduct during the next 12 months. You will receive, in due course, a formal written intimation of what I have just announced to you, and the intimation will specify the dates to which I have referred.

The Council then adjourned.

FRIDAY, NOV. 25TH.

The Council devoted this day to consideration of the reports of various committees.

Dental Education and Examination Committee.

This report was presented by Sir JAMES HODSDON, chairman of the committee, and dealt with three subjects: (*a*) colonial and foreign applications; (*b*) the dental curriculum; and (*c*) Dental Board of New South Wales. The revision of the curriculum was under consideration a few years ago, but the matter was postponed in view of the appointment of the departmental committee and the possible introduction of a new Dentists Bill. Now that the Bill had become the Dentists Act of 1921, and that the Council had the benefit of the advice of three members of the Dental Board, the recommendation was that it be referred to the Dental Education and Examination Committee to make suggestions for a revised curriculum in dentistry, and to report at the May session of the Council.

The report was adopted.

Union of South Africa and Empire of India.

The Executive Committee reported that, at its meeting on July 21st it received information that Part II. of the Medical Act, 1886, had been extended by an Order in Council to the Union of South Africa. The Committee having considered the curriculum of the University of South Africa, directed the Registrar as follows:—

"That any person who holds the degrees of M.B., Ch.B., granted after examination in medicine, surgery, and midwifery by the University of South Africa, shall be entitled to be registered in the Colonial List of the Medical Register, provided he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

At its meeting on Nov. 21st the Executive Committee received and considered a further application for the recognition of its degrees from the University of Cape Town and instructed the Registrar as follows:—

"That any person who holds the degrees of M.B., Ch.B., granted after examination in medicine, surgery, and midwifery by the University of Cape Town shall be entitled to be registered in the Colonial List of the Medical Register," with the same proviso as in the case of the University of South Africa. On the same date the Committee received a communication from University College, Johannesburg, formerly a constituent College of the University of South Africa, and the seat of its medical school, forwarding a copy of an Act of the Union creating the College a separate university under the title of the "University of the Witwatersrand, Johannesburg." The University of the Witwatersrand applied that the Council would grant to its degrees the same recognition as it did to those of the undivided University of South Africa. The Committee resolved:—

"That the Registrar be directed to register in the Colonial List of the Medical Register any person who holds the degrees of M.B., B.Ch., of the University of the Witwatersrand, Johannesburg, granted after examination in medicine, surgery, and midwifery, provided he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

On the same date the Committee considered a communication from the University of Lucknow, to which the King George Medical College, together with its hospital and hostel had been transferred from the University of Allahabad, applying that the recognition hitherto accorded to the degrees of the University of Allahabad should now be accorded to those of the University of Lucknow. The Committee resolved:—

"That the Registrar be directed to register in the Colonial List of the Medical Register any person who holds the degrees of M.B., B.S. of the University of Lucknow, provided

he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

The report was adopted by the Council.

Revision of Standing Orders.

On the motion of Dr. NORMAN WALKER, chairman of the Business Committee, seconded by Sir ARTHUR CHANCE, it was agreed that the Executive Committee be requested to revise the standing orders and report to the Council at the May session.

Public Health Committee.

Sir JOHN MOORE, chairman of the Committee, presented this report. In pursuance of a resolution of the Committee agreed to at the May session, to which the Council accorded sanction, the Committee held a special meeting on Sept. 27th, 1921, the session extending over two days.

On Nov. 26th, 1920, the General Council authorised the Committee to consider and revise the existing resolutions and rules for Diplomas in Public Health originally adopted by the Council on June 1st, 1889, and amended and amplified from time to time, particularly on Dec. 1st, 1911, with a view to bringing the special course of instruction required of candidates for the diploma into harmony with the duties of a modern medical officer of health. In approaching their task the Committee had the advantage of perusing the reports of the visitors on recent examinations for the Diplomas in Public Health held by many licensing bodies, particularly the reports of the inspector appointed by the General Council, Dr. R. Bruce Low, on these examinations, and the general report by the inspector on the series of examinations —a most able document drawn up after an exhaustive inspection by a man of great experience in all matters relating to public health.

The result of their study of the various reports was that the Committee were of opinion that the time had come for a reconsideration of concessions granted to meet the exigencies of the war. They were convinced of the necessity for lengthening the curriculum and for lengthening the scope of study and raising the standard of examination generally. As an aid towards the attainment of these ends, the Committee hoped that the General Council would, in the impending revision of the curriculum for qualifying examinations in medicine, surgery, and midwifery under the Medical Act, 1886, lay stress on the necessity for developing the teaching of the preventive aspects of medicine in the course for those examinations.

The Committee noted that the existing examinations passed, on the whole, the ordeal of visitation and inspection satisfactorily, and it also recorded with gratification that the 21 licensing bodies which grant diplomas or degrees in "Sanitary Science, Public Health, or State Medicine" took in good part such criticisms as have been offered.

The inspector's reports on the various examinations were epitomised as follows:—

England and Wales.

1. *English Conjoint Board.*—"Judged by present standards the examination, in my opinion, is quite satisfactory."

2. *University of Oxford.*—"The examination exacts from the candidate a high standard of knowledge."

3. *University of Cambridge.*—"An efficient test of the competent knowledge of the candidate in regard of the duties of a Medical Officer of Health."

4. *University of Durham.*—"Candidates require to possess a distinctly high proficiency in all the branches of Public Health and Preventive Medicine."

5. *University of London*, M.D. (State Medicine) Examination.—"Candidates need to possess a very high standard of proficiency in all the subjects pertaining to Public Health and Preventive Medicine."

6. *Victoria University of Manchester.*—"The examination requires a good standard of knowledge from those who desire to obtain the Diploma in Public Health."

7. *University of Birmingham.*—"The examination affords an efficient test of the knowledge of the candidates."

8. *University of Liverpool.*—"The examination exacts a high standard of knowledge from the candidates in all branches of Preventive Medicine and Public Health."

9. *University of Leeds.*—"The examination requires from all successful candidates a high standard of knowledge of Public Health and Preventive Medicine."

10. *University of Sheffield.*—"The examination requires of the candidates a high proficiency of knowledge in Sanitary Science and Preventive Medicine."

11. *University of Bristol.*—"The examination affords a satisfactory test of the theoretical and practical knowledge of the candidates in Sanitary Science and Preventive Medicine according to present standards."

12. *University of Wales.*—"The examination requires from the candidates a high standard of knowledge in the various branches of Sanitary Science and Preventive Medicine."

Scotland.

13. *Scottish Conjoint Board.*—"The examination in its character and scope, and as carried out at Glasgow in my presence, in May, 1920, exacted from the candidates a distinctly high proficiency, scientific and practical, in the various branches of knowledge associated with Public Health and Preventive Medicine."

14. *University of Edinburgh.*—"The standard of the examination is above the average, and those who pass must show a high proficiency in all the branches of Public Health."

15. *University of Glasgow.*—"Candidates for the B.Sc. in Public Health of the University of Glasgow must attain to a high standard of knowledge in all branches of Public Health and Preventive Medicine before they can hope to be successful."

16. *University of Aberdeen.*—"The examination, as at present carried out, furnishes a satisfactory test of the competence of the candidates in Public Health and Preventive Medicine; it exacts a high standard of knowledge from those who submit themselves to the test."

17. *University of St. Andrews.*—(Report incomplete owing to clashing of dates with the examination at the University of Dublin on June 20th, 1921.)—"From the evidence with which I was supplied I have no reason to doubt that the examination was efficiently carried out."

Ireland.

18. *Conjoint Board in Ireland.*—"The tests applied to the candidates were prolonged and searching. They called for a high standard of knowledge in the various branches of Public Health and Preventive Medicine."

19. *University of Dublin.*—"The examination exacts from the candidates a high proficiency in the various branches of Public Health and Preventive Medicine."

20. *National University of Ireland.*—"The examination may be regarded as an efficient test of the proficiency of the candidates—it requires that the candidates shall possess a high standard of knowledge of the various subjects."

21. *Queen's University, Belfast.*—"The examination affords a satisfactory test of the knowledge of the candidates, who are required to show a high standard in all branches of Public Health and Preventive Medicine."

In addition to the inspector's reports and those of various members of the General Council acting as visitors, the Committee received valuable communications from individuals, whose scientific standing and wide experience of all that concerns public health and preventive medicine bespoke an attentive hearing and thankful acknowledgment on the part of the Committee. Many licensing bodies also, as well as members of the Committee and others, made suggestions as to the revision of the resolutions and rules for the Diploma in State Medicine. Finally, the Committee submitted for the consideration of the General Council a draft of revised rules for the Diploma in Sanitary Science, Public Health, or State Medicine.

The main rules suggested in this draft were briefly as follows:—

1. A period of not less than two years to elapse between attainment by a candidate of a registrable qualification in medicine, surgery, and midwifery and his admission to the final examination for a diploma in sanitary science, public health, or State medicine.

2. The curriculum for a degree or diploma in sanitary science, public health, or State medicine to extend over a period of not less than 12 calendar months subsequent to attainment of a registrable qualification.

3. Every candidate to produce evidence of having attended, during a period of not less than five months, at an institution approved by the licensing body granting the diploma, practical instruction in laboratory work in: (*a*) Bacteriology and Parasitology (including Entomology), especially in their relation to diseases of man, and to diseases of lower animals transmissible to man; (*b*) Chemistry and Physics in relation to Public Health. At least 180 hours must be devoted to course (*a*), including not less than

150 hours of practical laboratory work. At least 90 hours must be devoted to course (*b*), including not less than 70 hours of practical laboratory work.

4. Every candidate to produce evidence of having received, during not less than 100 hours, at an institution or from teachers approved by the licensing body granting the diploma, instruction in the following subjects: (1) Principles of public health and sanitation; (2) epidemiology; (3) sanitary law and administration; (4) sanitary construction and planning; (5) vital statistics; (6) meteorology and climatology.

5. Every candidate to produce evidence that he has attended for three months on the practice of a recognised hospital for infectious diseases, and received instruction in the methods of administration. At least 30 attendances in not less than two days in each week shall be required, and clinical records of not fewer than six cases observed in the wards.

6. Every candidate to produce evidence of a period of not less than six months, spent in acquiring practical knowledge of the duties, routine and special, of public health administration under the supervision of a medical officer of health, who shall certify that the candidate has received, during not less than three hours of each of 60 working days, practical instruction in these duties, including those relating to: (*a*) Maternity and child welfare service; (*b*) health service for children of school age; (*c*) venereal diseases service; (*d*) tuberculosis service; (*e*) industrial hygiene; (*f*) inspection and control of food, including meat and milk.

7. The examination for the diploma or degree to be divided into two parts, Part I. and Part II., each of which shall extend over not less than two days, and shall be conducted by examiners specially qualified. A candidate must pass in all the subjects of Part I. before being admitted to examination for Part II., and must pass in all specified subjects in either Part I. and Part II. at the same time.

8. The examination for Part I. to be practical, written, and oral, and shall include the following subjects: Bacteriology and parasitology (including entomology); and chemistry and physics in relation to public health.

9. The examination for Part II. to include the following subjects: Hygiene and sanitation; epidemiology and infectious diseases; sanitary law and vital statistics; public health administration.

The examination to be written and oral, and to include practical examinations in infectious diseases; meat inspection; inspection of premises, dwellings, workshops, schools, &c. Candidates may not be admitted to examination for Part II. until after they have completed the prescribed courses of instruction, and until after the lapse of not less than two years from the date of his obtaining a registrable qualification in medicine, surgery, and midwifery.

The report was received and entered on the minutes.

(*To be continued.*)

TUBERCULOSIS.

RECENT AMERICAN WORK.

Comparative Susceptibility of Men to Tuberculosis in New York.

IN the *Bulletin of the New York Tuberculosis Association* for September–October, 1921, attention is drawn to the remarkably high death-rate from tuberculosis among males, as compared with females. Since 1910 there have been 67,748 deaths from tuberculosis among males of all ages, and only 31,148 among females. The proportion is thus 64 to 36. As the population of New York includes practically equal numbers of males and females, these figures can be taken as a true index to the comparative death-rates for the two. In both sexes the death-rate shows an almost identical decline since 1910; it is 44 per cent. among males and 45 per cent. among females. As this decline has continued during the first months of 1921, it is calculated that in the past 11 years the death-rate from tuberculosis in both sexes in New York has been halved. The remarkable sex difference in the death-rate is correlated with the overwork and unhygienic conditions from which males suffer outside the home. Pertinent to this matter is the fact that while in 1920 alone 146,054 visits were paid by nurses in the homes of patients, not one such visit was paid in the workshops employing men.

Re-infection in Tuberculosis.

It is doubtful whether much advance has been made towards the solution of the tangled problem of re-infection by a long paper on this subject by Dr. Edward R. Baldwin and Dr. Leroy U. Gardner in the *American Review of Tuberculosis* for August, 1921. But their experimental investigations and comprehensive review of the literature of the subject should serve a useful purpose in charting the many pitfalls lying in wait for the unwary. To decide whether and to what extent primary infection confers immunity to a second infection from without, they inoculated guinea-pigs by the inhalation of tubercle bacilli of the human type and of low virulence. The first step was to produce, if possible, a completely arrested tuberculosis before re-infection was attempted. They made use of the culture isolated by Trudeau as early as 1891, and subsequently used extensively in the U.S.A. in experimental tuberculosis. They found that re-infection is quite feasible when relatively large doses of tubercle bacilli are given by inhalation, but the second infection did not form the caseated tubercles with the regularity seen in the primary tuberculosis. There was, instead, a localised inflammatory reaction with, as a rule, a moderate degree of proliferation. The tracheo-bronchial glands suffered no further disease in the mild re-infections; in short, an abortive form of the disease was provoked, and the exceptional cases not conforming to this rule could be explained either on the assumption of overdosage or of absence of primary infection. In the second section of their work the authors attempt to apply clinical and epidemiological observations to the solution of the question: What proportion of old tuberculous foci is responsible for the clinical disease of adults? Their review shows that, according to different authorities, from 20 to 80 per cent. of clinical tuberculosis after the fifteenth year is derived directly from infection in childhood. The difference between 20 and 80 per cent. is rather wide.

Back to the Pulmonary Apices.

Of late years radiologists have been so engrossed by hilus tuberculosis that the apices of the lungs have suffered comparative neglect except by old-fashioned clinicians. A swing of the pendulum in this matter is to be found in a paper by Dr. James G. van Zwaluwenburg and Dr. G. P. Grabfield in the *American Review of Tuberculosis* for June, 1921. In a long series of cases they have paid special attention to a rather dense linear shadow, lying just beneath the second rib and over the apex of the lung, as seen in stereograms of the chest taken in the postero-anterior position. By imperceptible gradations these shadows merge into the well-known shadows of apical tuberculosis till it is impossible to distinguish the pleural from the pulmonary opacities. This study has led to the conclusion that the chronological order of this form of disease is: the lymphatics of the neck—the pleuræ—the apex of the lung. The phenomenon of pleurisy with effusion can be explained on the assumption that a serous exudate from an apical lesion gravitates to the lower thorax, spreading infection there. The suggestion is also made that the above route of infection is not necessarily the rule, and the prevailing distribution of the disease in children seems to point to some other route. In this connexion the guess may be ventured that the lymphatic drainage in the adult differs fundamentally from that in the child. Certainly radiologists agree that the picture of chronic pulmonary tuberculosis in the adult is very different from that in the child.

Conjugal Tuberculosis.

In a paper in the October number of the *American Review of Tuberculosis* Dr. Harry Lee Barnes discusses the possibility of tuberculous infection between husband and wife; incidentally and accidentally he shows how dangerous it may be to draw conclusions with regard to this much debated subject. His paper is based on the records of 5608 consecutive cases of tuberculosis admitted to the Rhode Island State Sanatorium. Of the 2262 married persons, only 62 of them stated that their consorts suffered from pulmonary tuberculosis. As 12 of these cases

were re-admissions, the number was reduced to 50 individuals; but the elimination of these duplicates did not, according to Dr. Barnes, make any material change in the percentage (2·7 per cent.) of patients with tuberculous consorts. That 2·7 per cent. of all married tuberculous patients should have tuberculous consorts is not surprising, as this percentage of the general population probably suffers from clinical tuberculosis. So far the case for conjugal tuberculosis is unconvincing. But the records of 229 consecutive widowed patients showed that 93, or 40 per cent., had lost their consorts by death from tuberculosis. As a control Dr. Barnes investigated the causes of death in 3400 married people under the age of 70, and he found that tuberculosis was the cause of death only in 12 per cent. According to this calculation, the percentage of persons widowed by tuberculosis is more than three times as great among sanatorium patients as among the general public. The objection may be raised that Dr. Barnes's comparison is misleading because, in all probability, most of his sanatorium patients were between the ages of 20 and 50. Yet he has compared their fate with that of married people up to the age of 70. Had he used as controls healthy widowed persons between the ages of 20 and 50, he would probably have found a higher tuberculous percentage than 12.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

MANCHESTER.

Dr. James Niven's annual report for 1920 is, as usual, a very interesting document. The death-rate from all causes is the lowest yet recorded: the low death-rate from tuberculosis also forms a record, while the marriage and birth-rates have risen. In the census figure for the population (730,551) the death-rate for the year works out to just under 14 per 1000 and the birth-rate 26·18. The (uncorrected) figure for the infant mortality rate is 97·08, the death-rate from pulmonary tuberculosis 1·1, and from other forms of tuberculosis 0·23. Dr. Niven pleads for a study of pneumonia. "Much work," he says, "has been done on its bacteriological study, but no real progress has yet been made towards elucidating its public health relations or the measures required for its reduction." Later in the report Dr. Niven points out that double occurrences of lobar pneumonia in a household are quite common, though frequently separated by considerable periods of time, and puts forward the suggestion that lobar pneumonia is, in a sense, infectious, though a third factor must be introduced to explain the vagaries of its infectivity.

On the question of venereal disease, Dr. Niven thinks we cannot yet say how much educational and clinical efforts have availed. In his view the question is largely one of prevention, and since he believes that the measures required to be taken by individuals are not difficult to apply, he considers it the duty of every person who incurs risk to take every possible means to avoid being the means of bringing destructive diseases to others. An early treatment centre was opened in December, 1919, and a second in September, 1920. Treatment is free and upon two conditions—viz., (1) that the exposure to infection has taken place within 12 hours; (2) that there are no signs of venereal disease. During 12½ months 3467 persons received treatment, 3218 coming from Manchester and Salford. The remainder were mostly from neighbouring districts, but 22 came from London and 12 from Liverpool. There is evidence that in 11 cases who exposed themselves to definite infection no disease developed. In the case of one centre the expenditure for 12½ months was £329, and of the other for four months £120. As regards the V.D. clinics, Dr. W. A. Young reports that far more males than females seek treatment. Among gonorrhœal cases the proportion of males to females is about 8 to 1. Dr. Young considers that little improvement in this respect can be expected until women are taught to regard all vaginal discharges as matters requiring special investigation. The number of cases ceasing to attend the clinics before completion of treatment is the most disappointing feature of the whole report, though good results were obtained at one clinic by sending out letters urging the patients to return to the centre. Dr. Young says: "The only remedy would appear to be in some form of notification of these cases with power to follow them up and compel them to continue treatment at approved centres or by approved medical practitioners until they comply with the accepted tests of cure." Provision for the intermediate treatment of gonorrhœa is inadequate, and patients resent the idea of going into the union infirmary at Crumpsall where alone accommodation, said to be excellent, has been made for pregnant women. At the end of 1920 there were 36 medical practitioners in Manchester qualified to receive salvarsan substitutes free of cost.

Dr. Niven states that, in spite of the assistance of the Panel Committee, notification of tuberculosis is still very late in many cases. He is puzzled by the considerable rise in the number of primary notifications of non-pulmonary tuberculosis, which accompanies a fall in the number of primary notifications of pulmonary tuberculosis. He does not think this is due to increased tuberculous infection in milk, and considers the possibility that there may be an increase in the number of tuberculous persons handling foodstuffs. The number of persons notified as suffering from pulmonary tuberculosis who were found to be handling foodstuffs in 1917, 1918, and 1919 was 66, 32, and 94 respectively. One of the conditions of notification of pulmonary tuberculosis was that the work of the notified consumptive was not to be interfered with. This has always been a weak spot in the regulations and ought to be amended.

Dr. D. P. Sutherland, the senior tuberculosis officer, deals with the failure to tackle the smoke nuisance, which is common to most mill districts. He attributes the "tolerance that is exhibited towards a death-dealing condition of this kind as in part the measure of Lancashire's preoccupation with its material progress. It tends towards decreased efficiency per unit, however, and in the larger view is very expensive." Dr. Niven has frequently referred to the importance of properly chosen and properly cooked food, and this report includes a note which has been issued to health visitors on vitamins. Manchester is now nearly up to date in scavenging arrangements, the relics of the evil past being represented by 217 midden-privies, 1322 pail closets, and 2182 wooden boxes for house refuse. We are surprised to learn that Manchester still tolerates such a state of things as that described in Dr. Niven's report on the nuisance from tips, several of which belong to the corporation and most of which were on fire in March, 1921. Manchester has apparently not gone in for destructors, and, we should think, would be well advised to consider the provision of one of the modern sorting plants which have given good results elsewhere. The shortage of houses was estimated at 17,727 in 1919. Dr. Niven says it is even greater now. In his next and last report Dr. Niven hopes to give a retrospect and a prospect as regards public health matters in Manchester.

SCHOOL MEDICAL SERVICE.

CAMBRIDGESHIRE.

There are 137 public elementary schools in this county, with a school roll of 10,822 children and an attendance of 10,229. Of these, 5356 underwent routine inspection, the number of children found to require treatment being 731, of which 328 received it. 3·7 per cent. of the routine cases suffered from enlarged tonsils and adenoids, 0·8 per cent. needing immediate operation. Breathing exercises are encouraged for those not requiring immediate operative treatment; printed instructions to this end are issued

to teachers for systematic use in schools, and also to parents when desirable. During the year 374 cases of impetigo were reported (100 more than the previous year), and these cases, as also 26 cases of scabies, were treated in their homes, being kept under observation the while by school nurses. 5947 home visits were paid by the nurses, mainly for the purpose of "following up" and inquiring into infectious disease. Arrangements for the treatment of defective vision have been made with Dr. J. C. W. Graham and a travelling ophthalmic clinic will be held by Dr. J. H. Gellatly, assistant school medical officer. A motor-car carrying equipment is also provided for dental treatment.

The number of children dentally inspected was 10,372 (16·5 per cent. more than last year), and the number treated was 2467 (1 per cent. more than last year). It is satisfactory that the number of teeth extracted (4890) shows a decrease of 5·8 per cent., while 1088 teeth were filled, an increase of 13·8 per cent. over last year's figure. Dr. Frank Robinson observes that extraction is necessarily more frequent in a rural scheme of dentistry owing to the inability of the dentist to pay the number of visits required for fillings. This would seem somewhat hard on the country child. The proportion of refusals of treatment decreased from 40 per cent. in 1919 to 34·2 per cent.; it is interesting to note that this reduction was recorded among the re-inspected children, particularly among those for whom treatment had been previously refused. The school nurses paid 1453 home visits in connexion with the dental work.

The question of dealing adequately with defective children is being taken in hand. Special arrangements have been made for several of these cases, but further accommodation is required, and the suggestion that adjoining education authorities should combine in this matter may be fruitful.

Out of a total of 137 schools 109 schools were closed for infectious disease, 57 for measles, 17 for whooping-cough, 9 for scarlet fever, 5 for diphtheria, 19 for influenza and epidemic catarrh, 1 for chicken-pox, and 1 for mumps. These figures seem very high.

CHESHIRE.

Of an average school attendance of 55,123, the total number of individual children examined in the county was 20,396, including 3149 special cases. 3·6 per cent. were referred for treatment for uncleanliness. There were 535 cases of enlarged tonsils and adenoids, 341 of which suffered from enlarged tonsils alone, and 219 from adenoid growths. Dr. Meredith Young, commenting on two cases of "aprosexia" brought to his notice during the year, refers to the immediate and striking improvement in mentality which followed within a month of the removal of adenoid tissue. 845 cases of dental disease were treated by the school dentist, whose appointment has been amply justified, and there is evidently plenty of work for at least one other dentist in the county. 1440 children were referred for detailed examination by the school oculists, 451 prescriptions for spectacles being given. Special leaflets on myopia and squint, adapted from those in use in the county of Durham, were circulated among parents. These leaflets serve to educate parents who, as a rule, are lamentably ignorant of ocular hygiene. The appointment of two school oculists has facilitated the treatment of a much larger number of children than it was possible to have treated in former years. Dr. W. J. McIvor finds enlargement of the thyroid gland common in both girls and boys at puberty; he also reports many cases of hypo-thyroidism. No exact figures are given, but the condition is said to be accompanied by defective nutrition, anæmia, and ichthyosis. Dr. Young notes that the condition of enlarged thyroid is accompanied by moist hands, and is often associated with a history of night sweats and disturbed sleep.

The number of feeble-minded children attending public elementary schools is reported as 113, 16 attend certified schools, and 26 are out of school altogether. Dr. W. Stacey made an intensive examination of 108 cases suspected of mental defect, and found 64 of these fit to attend the ordinary elementary school with a little special attention. This information was given to the head teacher and a scheme for the education of these children was outlined. Of the 108 only 29 were definitely defective. 26,047 free dinners were supplied during the year, 740 being given out at the minimum charge of 1*s.* a week per family. In February, 1921, distress became acute in certain districts and new feeding centres had to be opened. Dr. Young has found that, in the case of infectious disease, teachers are not so anxious as they used to be to make out a case for school closure, and they have coöperated loyally in helping to prevent the spread of disease. Very much can be done in this direction by intelligent teachers. Dr. Young reports that the work of medical inspection has now returned to pre-war conditions. He suggests, however, that the work itself would be much more interesting if the school doctors could have a rest from routine inspection and employ their time on some specialised problem.

EAST SUSSEX.

The County Council of East Sussex has 37,833 children aged from 5–16, of whom 23,271 are on school registers and 15,069 were examined, 11,141 undergoing routine inspection. 136 suffered from malnutrition, 606 from nose and throat troubles, 133 from defective hearing, and 93 from ear disease. Altogether, apart from those with defective foot-gear or suffering from uncleanliness, 1760 children were referred for treatment, and 1329 required further observation. Dental treatment has begun, but it is still insufficient. There are also beginnings of treatment for ophthalmic and other cases. There is no preventive treatment so far for physically defective or weakly children. Provision of classes for dull and backward children is also unsatisfied. The nursing is generally done by district nurses, but 17 schools were unprovided in this respect. There were 80 school closures for infectious disease, including whooping cough 16, mumps 7, chicken-pox 6, influenza 2; as these were mostly rural schools closure may have been unavoidable. Dr. A. G. R. Foulerton reports that arrangements for 1921 include the prospect of more clinics throughout the county. The appointment of extra medical help will relieve the present pressure of work and give opportunity for further development.

PERTHSHIRE.

The education authority's scheme for medical inspection and treatment has been approved by the Scottish Board of Health with certain reductions—e.g., £50 for a second set of instruments for the dental clinic, £135 for fitting up a county clinic. The cost of clerical work and a heavy stationery outlay was criticised by the Board, but it is understood that the first item includes the cost of assistance at dental and medical clinics, while all office sundries are included under the heading of stationery. Plans and estimates for a clinic at the Old Infirmary Buildings are shortly to be submitted,

WARWICKSHIRE.

This excellent report is made cumbersome by valueless tables printed on foolscap. There are in this county 319 schools with 37,000 children; many of the schools are overcrowded. One-third of the 15,898 children examined were referred for treatment. Only 13 per cent. of the school population had unclean heads, but 5 per cent. were excluded for impetigo. There is now an extra minor ailment centre, making seven in all, and during the year 2525 received treatment here. The comprehensive scheme for treatment in the county as a whole is now in full swing. This is the first complete year of dental treatment, which is carried out by means of a motor-car with portable dental equipment. Dr. A. Hamilton Wood remarks that one man can only touch

the fringe of this problem; there is work for at least three whole-time dentists among the 6–8 year group alone. Thirty cases of definite pulmonary tuberculosis and 58 suspected cases were reported, all of which received some form of treatment, 42 being sent to sanatoriums. The coöperation between the 25 infant welfare centres is strengthened by the employment of health visitors as school nurses; treatment of children 2–5 years of age might also be undertaken at these clinics.

SHREWSBURY.

Out of a school population of 5000 over 1000 were subjected to routine examination, and 1063 cases were treated at the school clinic, making altogether 4422 attendances. Of the 8-year-old group, 15 per cent. showed subnormal nutrition, compared with 6 per cent. of infants and 8 per cent. of leavers. No arrangements for providing school meals have yet been made, but, in spite of the high subnutrition no case of actual pulmonary tuberculosis is reported. 26·5 per cent. of infants were found to have dirty heads, whereas the intermediate group and the leavers showed only 8 per cent. and 4 per cent. respectively. This is contrary to the usual rule, infants generally showing a higher standard of cleanliness. A vigorous campaign against uncleanliness is being conducted. There is a comprehensive scheme of treatment, which is evidently taken advantage of to the full extent. The school medical officer, Dr. H. Gordon Smith, is also certifying factory surgeon for his district, and in this capacity is able to control to a certain extent the health of a large number of children after they have left school.

PRAGUE.

(FROM OUR OWN CORRESPONDENT.)

The Health Budget for 1922.

PARLIAMENT has approved the budget for 1922, amounting to 18 billion Czechoslovak crowns. The Ministry of Health and Physical Education has a budget of 149 millions, as compared with 18 millions in 1919, 46 millions in 1920, and 88 millions in 1921. The biggest item in the budget is 37 millions for the nationalisation of hospitals. This measure is due to the bad financial situation of these institutions owing to the war. Most of the hospitals have hitherto been in the hands of the district and provincial authorities, who had practically no resources, as the Austrian Government forbade them to collect local taxes. The second biggest item in the budget is 30 millions for maintenance of State institutions—hospitals, sanatoriums, preventoriums, and laboratories. Eleven millions are devoted to the fight against social diseases; this constitutes the biggest outlay for truly preventive work, the above-mentioned items being more curative than preventive. For special measures against epidemic diseases 12 millions are budgeted for, against 7 millions in 1921.

A Tuberculosis Sanatorium near Prague.

A large tuberculosis sanatorium has lately been completed at Prosecnice, near Prague; it was erected by the Central Federation of Sickness Insurance Associations, with money contributed by labour organisations. The sanatorium is well situated, with a good railway connexion; there will be 164 beds in the main building and over a hundred in the two wings, which are connected with the main block by open porticos. This establishment indicates an important advance in the antituberculosis campaign; hitherto Czechoslovakia has only possessed two sanatoriums for adults with pulmonary tuberculosis, and institutional treatment, especially for the insured, was impossible. There are a number of pavilions for tuberculosis in district general hospitals, but these places are filled with advanced cases and cannot be counted as sanatoriums.

Masaryk Antituberculosis League.

The Masaryk Antituberculosis League is about to give a course on tuberculosis for physicians in the first half of December. The lectures will be given by a member of the Society for Research in Tuberculosis and will consist of a series of 54 theoretical lectures. In addition there will be practical exercises. The number of attending physicians is limited. The course is given chiefly for the benefit of physicians who want to be connected with the tuberculosis dispensaries which are being erected all over the country under the auspices of the Masaryk League. This is a second course of the kind this year, and it has been arranged because the number of those who decided to attend the first course exceeded by far the number which could be admitted.

Health Insurance for Civil Servants.

The Senate is discussing a Bill to insure State employees of all classes against sickness. No financial benefit would be provided during sickness, because at such times State employees receive either salary or pension. Medical benefit is also extended to the insured person's family; the patient is free to choose his doctor among those physicians who have contracted with the insurance authorities, and is entitled to stay in a hospital as long as it is necessary. Lying-in hospitals are included. The dependent mother, wife, and daughter of the insured would receive during the last six weeks of pregnancy not less than 400 crowns, and after childbirth 600 crowns and 100 a week premium for nursing the child, payable for a period not longer than 12 weeks. The Bill goes further than insurance for working men, in that it permits payment of transportation fees when patients have to leave home for treatment by a specialist. The Bill would not include employees in provincial or district services: the latter would then constitute the only salaried profession which is not yet included in some form of sickness insurance.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Tuberculosis in Belfast.

Dr. Andrew Trimble, chief tuberculosis officer of the city, has issued his report for the year 1920–21. It is a complete and, in most respects, a satisfactory document. The most important event of the year was the opening of the Municipal Hospital for Tuberculous Children at Graymount, consisting of a residence and grounds of about 15 acres; an open-air school for children in connexion with this institution is intended for "contacts." The children attending the school are provided with tram tokens for the journey to and from the school, and with two meals served during school hours. Open-air instruction is found to have a most beneficial effect upon the children. In the various tuberculosis institutes in the city 2121 examinations of new patients were conducted during the year. The new patients numbered 2234, including 113 transfers, compared with 2675, 2358, 3420, and 2977 in the four previous years. Pulmonary cases numbered 935, of whom 446 were males and 489 females. There were 119 glandular cases (44 male and 75 female); osseous cases numbered 82 (33 male and 49 female); and abdominal cases 28 (15 male and 13 female). There remained 22 other forms of tuberculosis, of whom 6 were male and 16 female. The preponderance of females is in accord with the experience of former years, and probably finds its explanation, in whole or in part, in the conditions of female employment. 1579 patients received treatment at the Institute, 3945 received domiciliary treatment, and 250 received sanatorium treatment. The total number of deaths was 978, of whom 762 died from pulmonary tuberculosis. This is a reduction of 91 deaths as compared with the previous year, and represents a

rate of 1·8 per 1000, compared with 2·1 per 1000 in 1919. The death-rate from tuberculosis in Belfast has fallen by 61 per cent. since 1890, and by 44 per cent. since 1900, the rate in 1920 being the lowest during the last 40 years. An analysis of cases arising in connexion with the various trades of the city shows that the higher figures were found in the following occupations: Clerks 17, carters 11, messengers 11, engineers 27, tobacco workers 18, doffers 26, drawers 11, laundresses 20, reelers 16, spinners 25, stitchers 40, winders 11. There were 160 cases amongst discharged soldiers, 122 cases amongst school boys, 142 amongst school girls, and 135 cases amongst housewives. Of 1186 patients found to be suffering from tuberculosis during the year 471, or over 39 per cent., have had personal association with tuberculosis amongst the members of their families. Dr. Trimble lays stress upon preventive measures, and the need for more attention to be given in the medical curriculum to the prevention of disease. According to Dr. Trimble the public are becoming more alive to the significance of early symptoms, and the importance of prompt diagnosis and treatment. The nurses in the employment of the Institute report improvement in the habits of the people, and a higher average of cleanliness. Dr. Trimble pleads for patience in estimating the results of anti-tuberculosis measures.

Queen's University of Belfast.

The Vice-Chancellor has presented to the Senate his report for the year 1920–21. The number of students in attendance was 1076, of whom 762 were men and 314 women. In the medical faculty the number was 588, 463 men and 125 women. The Medical Museum has been rearranged, and many new specimens, especially in the embryological collection, have been added. The new department of dentistry is now in full working order. During the year the students of the University undertook a street collection on behalf of this department. The sum of £1000 was realised and handed over to the Royal Victoria Hospital to equip the dental department of that institution. This department is now in possession of adequate premises and a full modern equipment.

The late Sir Joseph Michael Redmond, M.D.

Sir Joseph Redmond, past President of the Royal College of Physicians of Ireland, died suddenly on the morning of Nov. 25th at his residence, Merrion-square, Dublin. Although of late years he had reason to suspect some cardiac weakness, his health had recently given rise to no special cause for anxiety, and after a full and active day on Nov. 24th he retired to rest as usual. A few hours later he passed quietly away. He was 68 years of age. Sir Joseph Redmond's whole professional life was spent in Dublin. Having taken his qualification from the Royal College of Surgeons in 1878, he was for some time demonstrator of anatomy in the Catholic University School of Medicine. He was appointed one of the physicians to the Mater Misericordiæ Hospital, to which institution he gave devoted service up to his death. He became M.D. Brux. (honours) in 1890, and also received the M.D. N.U.I., *honoris causâ*. He held many posts as consulting physician to various charitable institutions, and acted as examiner to the Royal College of Physicians. He was Vice-President of the College from 1900 to 1902, and President from 1906 to 1908. On the termination of his office as President he received the honour of knighthood. He was a frequent contributor to medical literature. Sir Joseph Redmond was one of the most modest and unassuming of men, but with much quiet dignity; as a physician he was thoughtful and careful, and his abilities, together with the general confidence felt in his high character, assured him a lucrative practice as well as an honoured place in the profession.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—A dinner will be held to-day, Friday, at the Connaught Rooms, Great Queen-street, London, W.C., at 7 for 7.30 P.M., Mr. James Berry presiding.

Correspondence.

"Audi alteram partem."

CLAYDEN *v.* WOOD-HILL.

To the Editor of THE LANCET.

SIR,—The facts of the case of Clayden *v.* Wood-Hill recently decided at the Suffolk Assizes, a short report of which appeared in your issue of Nov. 19th, when a verdict of £750 damages was given against a medical man for alleged negligence in the treatment of a fractured femur, should be studied by all medical practitioners. The plaintiff was thrown out of a trap and sustained a fracture of the upper third of the right femur. Two days later she was moved to the Beccles Cottage Hospital, in Suffolk, where Dr. Wood-Hill, of Beccles, attended her. The fragments united, and in eight weeks she returned home to Hertfordshire with strict instructions from Dr Wood-Hill that no weight was to be borne by the limb without the permission of her family doctor. A week later, when standing in her room at home, she felt the limb give way and she fell on to a sofa. Abundant evidence was produced at the trial that as regards splinting, extension, and position of the limb, the fracture was treated in accordance with modern methods while the plaintiff was an inmate of the Beccles Cottage Hospital.

The verdict of the jury largely turned on the question as to whether, at the second accident nine weeks after the first, a giving way of the previously united fragments took place. By very adroitly drawing from one item in the medical evidence bearing on this question an inference which, from a medical point of view, was entirely unjustifiable, counsel for the plaintiff induced the jury to bring in a verdict for the plaintiff with damages as stated. Many of those who watched the case throughout its course are convinced that a grave miscarriage of justice has taken place, and for this reason a fund has been started to reimburse Dr. Wood-Hill in the very heavy expenses incurred by him, which, we are informed, will amount, with costs, to about £1600. Naturally, the question of appeal has been very carefully considered, and Dr. Wood-Hill has been advised against this course by both his counsel and his solicitor.

It is true that at the time of the trial Dr. Wood-Hill was not a member of one of the Medical Defence societies, but this, although showing a lack of foresight on his part, is no reason for refusing to help him in this emergency. The fund will also serve as a token of the respect and esteem in which Dr. Wood-Hill is held in Beccles and the neighbourhood.

The following subscriptions have already been promised:—

	£	s.	d.
Mr. Hugh P. Helsham (Beccles)	26	5	0
Mr. John H. Allden (Beccles)	20	0	0
Mr. Christopher T. Helsham (Beccles), Sir Robert Jones (Liverpool), Mr. George E. Gask (London), Mr. R. C. Elmslie (London), Dr. Samuel J. Barton (Norwich), Dr. F. W. Burton-Fanning (Norwich), Sir Hamilton Ballance (Norwich), and Dr. Wilson Tyson (Lowestoft) .. .. each	10	10	0
Sir John Lynn-Thomas	10	0	0
Dr. H. Muir Evans (Lowestoft), Dr. C. B. Ticehurst (Lowestoft), Dr. D. W. Boswell (Lowestoft), Mr. J. C. Mead (Lowestoft), Mr. S. H. Burton (Norwich), Mr. Donald D. Day (Norwich), Dr. Sydney H. Long (Norwich), Mr. A. J. Blaxland (Norwich), Dr. R. W. Mullock (Southwold) .. .. .. each	5	5	0
Dr. D. H. Hutchinson (Lowestoft)	3	3	0
Mr. E. W. Everett (Norwich), Dr. H. J. Starling (Norwich), Mr. S. F. Smith (Beccles) .. each	2	2	0

Subscriptions should be sent to Sir Hamilton Ballance, Norwich, and will be acknowledged from time to time in the medical press.

We are, Sir, yours faithfully,

ROBERT JONES, JOHN LYNN-THOMAS.
GEORGE E. GASK, HAMILTON A. BALLANCE,
R. C. ELMSLIE, WILSON TYSON.

Nov. 26th, 1921.

*** Since our brief report of this case appeared on Nov. 19th (p. 1073) it has been made perfectly clear that while the X ray apparatus at the Beccles Hospital

was in perfectly good order, it was not powerful enough to take an X ray photograph of the upper part of the femur. The patient therefore would have had to be sent at least 11 miles away in order to obtain an X ray photograph of the injury, and the judge actually ruled that the fact that an X ray photograph had not been taken was no evidence of negligence. On the other hand, he laid great stress in his charge to the jury as to whether there was or was not a re-fracture of the bone when the patient met with the second accident about nine weeks after the first. We commend Dr. Wood-Hill's hard case to the generosity of his fellow practitioners, any one of whom, if unprotected by a defence society, might easily be in the same predicament to-morrow.—ED. L.

THE ÆTIOLOGY OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Harry Campbell's letter in your issue of Nov. 19th a chapter of family history may be not uninteresting. When my children were born—they are now aged 20, 19, and 16—I determined that they should be fed on the sensible lines advocated by my friend Dr. Sim Wallace. Their jaws are well developed, the teeth regular and almost free from caries. Curiously enough, the largest amount of caries occurs in the eldest child, who also had slight rickets, the only one who was breast-fed for six months; the others were bottle fed.

So far so good. As regards adenoids I have a different tale to tell. They all developed adenoid symptoms at an early age, and the adenoids were removed at about 3 or 4. At about 7 or 8 they all developed enlarged tonsils, and these were operated upon, a fresh crop of adenoids being removed at the same time. These children were all "fresh air" children, out in all weathers, windows never shut. Dr. Sim Wallace attributes adenoids to our weather conditions. The hereditary factor must be eliminated, as neither my wife nor myself have ever had any adenoid or tonsil trouble. Nasal hygiene was carefully attended to.

Dr. Campbell asks for a flaw in his argument that "a cause of adenoids is to be sought for in the nature of the British dietary"—namely, "an excess of sugar and soft starchy foods." It may be a contributory cause, and in any case it should be remedied, but my facts as stated above go to show it is not the only cause.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 21st, 1921. WM. RUSHTON.

THE PATHOLOGY OF LUPUS.

To the Editor of THE LANCET.

SIR,—I read with extreme interest the Hunterian Lecture on Lupus by Mr. Sampson Handley in your issue of Nov. 26th, and especially the paragraphs relating to Lupus Epithelioma. Discussing the infrequency of dissemination in this condition, he states that "it may be assumed with great probability that either the disease had infiltrated into regions of intact lymphatics beyond the lupoid area, or that the glands were not malignant but tuberculous" in the few cases where enlarged glands are present. Cases of lupus epithelioma are not very common, and in consequence I record the following case, upon which I operated last month, in which the enlarged glands were proved to be tuberculous:—

W. B., aged 23, had been treated for years by our dermatologist for lupus of both hands and forearms. Five months prior to admission he had received a blow whilst at work which had caused ulceration of the dorsum of the left hand. He stated that the ulcer had grown rapidly, and when seen before admission to the surgical ward it was typically epitheliomatous and the size of a five-shilling piece. The diagnosis was confirmed by a section from the margin of the ulcer. There were several hard glands in the left axilla—one the size of a walnut. He had had no X ray treatment since 1914. On Oct. 18th the limb was amputated just above the elbow, some difficulty being experienced in obtaining unaffected skin with which to form the flaps. Seven days later the glands and fat were cleared from the axilla. It was feared that they were malignant, and they were sent to the University Laboratory for examination. The pathological report stated that tuberculous granulation tissue was present in the glands and that there was no evidence of secondary malignancy.

All the skin surrounding the malignant ulcer was lupoid, and the lymphatics of the ulcerated area had presumably been obliterated by the tuberculous process, so rendering cancerous permeation impossible. Had Mr. Handley's pathology of lupus been available at the time, one could have asserted that the axillary glands were most probably tuberculous and not malignant.—I am, Sir, yours faithfully,

H. BLACOW YATES, M.B., B.Ch.,
Nov. 26th, 1921. R.S.O., Sheffield Royal Hospital.

THE EARLY DISCHARGE OF SCARLET FEVER CASES.

To the Editor of THE LANCET.

SIR.—Referring to Dr. James T. Neech's letter in your issue of Nov. 26th, I write to say that for the last 19 years uncomplicated cases of scarlet fever have been habitually discharged at the end of four or five weeks (from the commencement of the illness) from at least one of the hospitals of the Metropolitan Asylums Board. A large number of these cases were desquamating at the time they left the hospital and no special preparation was used upon the skin.

I am, Sir, yours faithfully,

E. W. GOODALL.

North-Western Hospital, Hampstead, Nov. 27th, 1921.

CHILDREN'S ORTHOPÆDIC CENTRES.

To the Editor of THE LANCET.

SIR,—Everybody will welcome the effort that is being made by the Central Committee for the Care of Cripples to improve the treatment of crippled children. You recently described this effort in a special article and annotation (THE LANCET, Sept. 24th, pp. 663 and 669). Every community should aim at bringing up its children, so that they are clean-limbed and vigorous. In order to do so, all probable and possible deformities should be anticipated and as far as possible prevented. The children in schools should be examined by a medical man having a knowledge of orthopædics and physical exercises, who could, where necessary, devise exercises to suit special cases. After examination he could divide the children requiring special treatment, in addition to the ordinary general exercises, into three or four groups, each group being ordered a special set of exercises to prevent possible deformities. A suggested grouping might be into children requiring:—

1. Breathing and chest expansion exercises.
2. Abdominal and back exercises.
3. Leg and foot exercises.
4. Relaxation and coördination exercises.

The four groups could be taught and supervised at the school and their progress reported on fortnightly by the visiting medical man. Any child suffering from a definite deformity or nervous disease, would be transferred to the Children's Orthopædic Centre for special treatment and examination. If a primary surgical operation is required, the child would be recommended for admission to the orthopædic hospital working in conjunction with the particular centre. If a primary operation is not required the deformity due to a nervous disease would be corrected if possible by remedial exercises, massage, electricity, and splinting.

The orthopædic centre and the schools should naturally coördinate in the treatment of the child, and in order not to interrupt education, a special form or desk to aid in the correction of the child's deformity should be available when prescribed by the centre. The more scientific treatment before and after operation would be carried out at the centre. In cases of paralysis an exhaustive testing of reactions of muscles should be gone through prior to any orthopædic surgical inter-

ference being recommended. After operation the re-education of muscles should be patiently carried out, taking care that the stronger muscles are kept in abeyance whilst the tone in the weaker muscles is being developed. For example, we often see inversion of the foot from an external popliteal nerve lesion, due to the over-action of the tibialis anticus. This would be avoided if the weaker peronei had been concentrated upon; a possible transplantation of the tibialis anticus, to correct inversion, would be unnecessary. This neglect of the weaker muscles is seen equally in recovery after musculo-spiral nerve lesions, where you get radial deviation on dorsi-flexing the wrist. This can and should be avoided. In splinting a hand or foot when paresis is present in the extensor group, full dorsi-flexion should not be resorted to. The extensor group will thus be able to work in the inner range if and when voluntary power returns, and a spasm in the antergic or flexor group will be avoided.

Some such scheme of coördination between schools, centre and orthopædic hospital, would help the work and objects of the Central Committee, and might form a basis for a national orthopædic scheme.

I am, Sir, yours faithfully,

M. DOCKRELL.

Ministry of Pensions Hospital, Blackrock, co. Dublin, Nov. 25th, 1921.

THE QUESTION OF SELF-DISINFECTION.

To the Editor of THE LANCET.

SIR,—We, the undersigned, physicians and surgeons, medical officers of health, and officers in medical charge of venereal disease clinics, having reviewed the whole subject, have not formed our opinion on the question of self-disinfection without careful consideration. In addition to practical experience the following points are convincing:—

1. Such evidence as has been adduced in favour of this policy is founded on the results obtained in the Navy and Army among men, under discipline, who were carefully and in many cases individually instructed by certain enthusiastic and competent officers. When tried by other keen medical officers with men under discipline the method failed. Even had it been successful, to teach and instruct the civilian population in as detailed a manner is obviously impossible. Careful individual and collective detailed instruction is given to the troops of the British Armies of Occupation in Germany and at Constantinople. Materials and packets for self-disinfection are available, yet, in the Army of the Black Sea, the rate of infection was 213·73 per 1000 for 1920 and 238·94 per 1000 men for January to June, 1921 (House of Commons, Nov. 3rd, 1921) and in the Army of the Rhine the figures are 188·62 per 1000 men for 1920, and 148·90 per 1000 for January to June, 1921 (House of Commons, Nov. 3rd, 1921).

2. Unless disinfection is extremely carefully carried out it would fail to effect its purpose. In the largest clinic in London between July and September of this year, out of 375 men presenting themselves for treatment 101 had used some form of chemical disinfection, chiefly permanganate of potash, within a very short time of running the risk; and from September up to date, of 201 new cases 47 had used permanganate of potash, the majority of them within 5, 10, 15, or 20 minutes after exposure to infection.

3. Self-disinfection has been extensively carried out in Germany during the last six years, and great stress, during an intensive campaign, has been laid on the virtue of prophylaxis and self-disinfection. The German delegates at the Red Cross Congress at Copenhagen last May stated that in their opinion there was no evidence of diminution in the number of cases of venereal disease, and no sign of any fall in its incidence. Dr. Pinkus stated that, in Berlin alone, he estimated that there were 25,000 fresh cases of infection each year.

4. It is likely to lead to disease in large numbers of young persons. In Dresden, where the system of prophylaxis by self-disinfection has been actively pressed by poster, handbill, and address, it was found that the number of boys between 14 and 18 coming up for treatment at one clinic had increased during one year from 14 to 104, and of girls between the same ages from 60 to 116. In the first three months of 1921 the number of boys was 33 and of girls 61.

5. The first risk may be as fatal in causing disease as the fiftieth, and a boy of 15 is just as capable of taking infection and conveying the disease as a man of 50. Therefore, to carry out this policy effectually, it would be necessary to instruct every boy on reaching the ages of 14 or 15, and see that he is provided with disinfecting materials.

6. The argument in favour of self-disinfection is that it can be carried out without any delay. To fulfil this condition it would be necessary for the disinfectants to be carried on the person. This would be an ever present and continuing incitement to illicit intercourse, and would tend to lead to an increase in the number of risks incurred.

7. It is very nearly impossible for women satisfactorily to disinfect themselves. This is shown by the conditions existing in Constantinople, where instruction in the methods of self-disinfection has for some time past been given by medical men to all prostitutes at the examination centres. In spite of this, however, the number of infected women in this group works out at 560 out of 2000 each month.

8. Notwithstanding any warning given, a certain number of individuals, in whom the diseases may have developed, will persist in using the disinfectant materials as a means of treatment. By so delaying the use of true remedial measures, they will prolong the period of infectivity to others, and of treatment necessary for cure for themselves. This is within the experience of a number of the signatories.

We are, therefore, of opinion that the policy of promiscuous propaganda as to the security conferred by personal self-disinfection among the civilian population is likely not only to fail in its object in decreasing the amount of venereal disease, but also may actually lead to an increase in the gross number of cases.

We are, Sir, yours faithfully,

(Signed)

WILLIAM AINSLIE.*
JAMES ASHE.
RUTH BALMER.*
HENRY BARDSLEY.*
THOMAS BARLOW.
FLORENCE BARRETT.
PERCY BASSETT-SMITH.
WILLIAM BENTON.†
ELIZABETH BOLTON.
PHILIP BOOBBYER.†
JOHN J. BUCHAN.†
J. C. BUCKLEY.*
MARY G. CARDWELL.*
EVELINE CARGILL.
A. K. CHALMERS.†
FRANCIS CHAMPNEYS.
ANNIE CLARK.*
A. B. COTTELL.
ROBERT DONNELLAN.
MARY BUCHAN DOUIE.
DYCE DUCKWORTH.
ERIE EVANS.*
LETITIA FAIRFIELD.
G. R. FLETCHER.
G. E. GASK.
CHARLES GIBBS.*
THOMAS GIBSON.†
ALFRED PEARCE GOULD.
RUPERT HALLAM.
H. MCCORMICK HANSCHELL.*
DOROTHY C. HARE.
P. MAYNARD HEATH.
LYDIA M. HENRY.*
A. BOSTOCK HILL.†
T. EUSTACE HILL.†
J. A. HISLOP.†
S. J. HOLDEN.†
JONATHAN HUTCHINSON.
J. JOHNSTONE JERVIS.†
R. H. H. JOLLY.†
JAMES KAYE.†
G. KETTLEWELL.*
HAROLD LEADER.
E. LEWYS LLOYD.†
JAMES ALEXANDER LINDSAY.
CHARLES MACALISTER.
EWEN J. MACLEAN.
MARY H. MACNICOL.*
OTTO MAY.
LOUISE MCILROY.
CHARLES MELVILLE.
JANE MILLER.*
WILLIAM MILLIGAN.
MALCOLM MORRIS.
S. G. MOSTYN.†
GEORGE MURRAY.
BERNARD MYERS.
FRANK RADCLIFFE.
M. L. RAWLINS.*
JOHN ROBERTSON.†
FRANK ROBINSON.†
BERTRAM ROGERS.
MARGARET RORKE.*
AMAND ROUTH.
WILLIAM G. SAVAGE.†
MARY SCHARLIEB.
A. RENDLE SHORT.
EDMUND M. SMITH.†
JAMES STOWERS.
H. H. TOOTH.
E. B. TURNER.
FRANK WACHER.†
JANE WALKER.
KENNETH MACFARLANE WALKER.*
A. M. CHALMERS-WATSON.
JAMES WHEATLEY.†
DOUGLAS WHITE.
H. HEATHCOTE WHITE.*
R. WHITEHEAD.
BECKWITH WHITEHOUSE.*
WILLIAM WHITLA.
W. KENNETH WILLS.*
JOHN T. WILSON.†
F. T. H. WOOD.†
GERMAN SIMS WOODHEAD.
A. F. WRIGHT.

* V.D. Clinic Officers.
† M.O.H. for Counties or County Boroughs.

National Council for Combating Venereal Diseases, 80, Avenue Chambers, Southampton-row, London, W.C. 1, Nov. 29th, 1921.

RENAL EFFICIENCY TESTS.

To the Editor of THE LANCET.

SIR,—I was reported in your issue of Nov. 26th as saying at a recent meeting of the Bristol Medico-Chirurgical Society that there was a "close parallelism between the curve of fluid outflow . . . . and the output of urea." The charts shown were in illustration of the established fact that the specific gravity of the

urine varies directly with the amount of urea present and that in the two-hourly specific gravity test for renal efficiency the point on which stress is laid—namely, the variation of more than eight degrees—depends on the excretion of urea and water primarily, chlorides to a less extent. The close parallelism is between the S.G. of the urine and the percentage of urea. The S.G. was estimated with the pyknometer and the urea percentage found by the technique and calculation devised by Prof. H. MacLean.

I am, Sir, yours faithfully,

Clifton, Bristol, Nov. 27th, 1921. CECIL CLARKE.

THE ORIGIN OF VACCINATION.

To the Editor of THE LANCET.

SIR,—In his profoundly interesting inaugural address before the Midland Medical Society at Birmingham on Nov. 2nd (THE LANCET, Nov. 26th, p. 1139), Prof. W. D. Halliburton is reported to have said :—

"Such excursions of the imagination may not come into the domain of exact knowledge, but they have led to understanding of such an operation as vaccination—*a purely empirical procedure in Edward Jenner's day*—and have enabled practical men to devise corresponding means for the prevention or cure of other diseases."

In this pretension (the italics are mine) I must join issue, as the right understanding of the evidence is of such importance to the whole world, and its correct inference was never of greater importance than now when vaccination has become unmeaning amongst the uneducated in this country, largely from the misunderstanding of the facts.

What are the facts? When ascertained they were certainly not excursions of the imagination, nor were they empirical. In 1774 Benjamin Testy, a Gloucestershire farmer, to save his family from the hideous disfigurement and blindness occasioned by small-pox (the plainest of women were considered beautiful when unscarred by it) as well as its appalling mortality, inoculated with cow-pox his wife and two sons for the purpose of protecting them from small-pox. He succeeded, and had the honour of being "stoned" and reviled by his neighbours. What led him to inoculate them was the popular tradition of the district, incited mainly by the hilarity of the dairy-maids who milked the cows, and who jeered at the thought of catching small-pox when they had already contracted cow-pox in their daily occupation.

In 1796, the immortal Edward Jenner, the inoculator of small-pox in his district in Gloucestershire, after weighing all the evidence he had gained, had the courage to carry out his closely reasoned conclusions that the facts were unassailable, and established on sure ground the practice of vaccination which the whole world gripped after the usual period of opposition and calumny.

I am, Sir, yours faithfully,

Rugby, Nov. 25th, 1921. CLEMENT DUKES.

EQUITY IN HOSPITAL APPOINTMENTS.

To the Editor of THE LANCET.

SIR,—The gift of being able to touch a sore spot without provoking pain is denied to most, but this ideal is very nearly achieved by Sir Clifford Allbutt in THE LANCET of Nov. 5th, in his candid yet courteous discussion of the election of candidates for honorary hospital appointments. He writes :—

"It is easy now, when good appointments have been made in the London University, to say, nevertheless, that the mode leaves something to be desired. At present the election is virtually in the hands of the honorary staff of the hospital concerned. It is true that hitherto the hospital staffs have used their power loyally and with moderation; but this gives us no guarantee for the future. In the London University it would be better for the Senate to establish standing election committees, renewed by rotation, of independent—that is, ad hoc unofficial—persons of distinction in the several parts of medicine. The hospital staff would thus be relieved of the duty not only to consider the claims of particular interests or promotions, but also those of past services or private friendships."

Every large hospital has its secret history of staff election politics, and if we are to believe unsuccessful candidates, many first-rate men are now eating their hearts out because their rivals had other support than that of their intrinsic merits. What are the qualifications, primary and secondary, required, and who are the best judges thereof? On the second point Sir Clifford Allbutt is perfectly explicit, and few will join issue with him on it, though the principle for which he pleads seems to have been honoured chiefly in the breach. But what of the qualifications for these appointments? What, if any, importance is to be attached to "breeding," eminence in athletics, suavity, and the many other social qualifications which count in the election of an aspirant to membership of an exclusive upper-middle-class club? We know that the possessor of these qualifications succeeds better in life than the man who looks like a drain rat, runs amuck with his aspirates, and adopts a frankly irreverent attitude towards incompetence in high places.

The first type may be personally more attractive than the second, but it is well to remember the oft-quoted dictum of head masters that the popular school boy seldom rises above mediocrity, and that a shaggy exterior and uncouth manners may hide genius. An old frequenter of medical congresses once said that their chief value lay in the opportunities they afforded of studying prominent men hitherto known only by their writings. And he revised his estimate of the written word according as the authors thereof gave a good or bad impression when they spake. Is this test sound? Against it might be cited the case of Moses, St. Paul, and many another intellectual giant without "presence" and unable to shine on a platform. Many a man of minor gifts has bluffed his way to eminence by sheer force of speciousness. In his "Life of Gladstone" Lord Morley tells of an Oxford don who always looked as if he was going to say something witty. It was not till a critical observer remarked that he never got beyond this stage that his reputation as a wit was shattered. It is, of course, very difficult to appraise the qualifications of candidates for honorary hospital appointments, but the unsuccessful candidate, convinced of the inferiority of his successful rival, may find consolation in the reflection that, when mediocrity backed by nepotism prevails, the iconoclastic judgment of students at the large teaching hospitals soon leaves naked the nether part of the idol with feet of clay.

With regard to resident hospital appointments, the selection of candidates is usually quite fair, and they are now seldom expected personally to canvass the members of the senior honorary staff. I do not wish to sign this, as it might appear that I was making personal reflections, but you, Sir, will recognise that I am, as well as yourself,

Nov. 14th, 1921. QUITE DISINTERESTED.

SWIMMING FACILITIES FOR BLIND CHILDREN.—Some time ago the Education Committee of the London County Council was authorised to consider whether facilities with regard to swimming should be provided for children attending the Council's schools for the blind. After careful consideration and consultation with the managing committees of the schools in question, the Education Committee has reported to the Council that, in their opinion, it would be inadvisable to proceed further with the suggestion. The Council has, therefore, decided that no provision for swimming shall be made.

THE LATE DR. W. H. SMART.—William Herbert Smart, who died suddenly on Nov. 5th, after an operation, at a nursing home in Birmingham, aged 59, was the only son of the late Sir William Richard Edwin Smart, K.C.B., R.N., and was educated at Caius College, Cambridge, and at St. Thomas's Hospital. He graduated in 1882, and became M.A., M.B. in 1886, having in the previous year obtained the M.R.C.S. Eng. After holding a house appointment at St. Thomas's Hospital he was resident clinical assistant at the East London Hospital for Children, and later entered upon medical practice at Polesworth, near Tamworth, where for upwards of 30 years he was medical officer of the district under the Atherstone Board of Guardians. In 1897 he contributed to our columns a note on a case of tetanus successfully treated by antitoxin.

Obituary.

PETER THOMPSON, M.D., CH.B. MANCH.,

PROFESSOR OF ANATOMY AT THE UNIVERSITY OF BIRMINGHAM.

THE death of Peter Thompson, which occurred at Penmaenmawr on Nov. 16th, after a long illness, causes a gap in the ranks of British anatomists which will not easily be filled. The only son of the late Mr. Peter Thompson, of Earlestown, Lancashire, he was born in 1871 and was educated at Upholland Grammar School. Thence he proceeded to Owens College (which afterwards became the Victoria University of Manchester), and after a distinguished career as a student he graduated M.B., Ch.B., with second-class honours in 1894, and in 1899 took the M.D. as a gold medallist. After holding the appointments of senior demonstrator of anatomy in Owens College and lecturer in anatomy in Victoria University, Thompson came to London and was appointed lecturer on anatomy at Middlesex Hospital. From 1901 to 1904 he was hon. secretary of the Anatomical Society of Great Britain and Ireland, and from 1905 to 1909 professor of anatomy and Dean of the Faculty of Medicine at King's College. He was then elected to the chair of anatomy at Birmingham, where he had been Dean of the Faculty of Medicine since 1912.

Thompson was always an enthusiastic anatomist, showing his wide view of the subject even in his student days. Trained under the late Prof. Young of Manchester, his work tended at first in the direction of comparative anatomy, with a view to the light thrown by this on human structure, and he came prominently into the notice of the anatomical world by his well-known work on "The Myology of the Pelvic Floor": this was followed by papers on variants of the same subject, and also on other comparative subjects, mainly myological. About the time he accepted the chair at King's College he began to take an absorbing interest in embryology. In a lecture delivered there in 1908 he emphasised the need for visualising embryonic structures, and after describing His's method of model-making gave a vivid account and demonstration of Prof. Born's method of reconstruction by means of wax plates. He spent some time in Germany, working in Keibel's laboratory, where he acquired a knowledge of the various technical processes which are utilised in embryological work. He produced several papers of value, dealing with general conditions and special parts of young human embryos. These showed evidence, as did all Thompson's work, of care, thoroughness, and extensive knowledge of the literature of the subject in hand. He continued this embryological work after he went to Birmingham, but the disease which ultimately cut short his career soon began to affect his power of work; in fact, shortly before the beginning of the war, he said to a colleague that he felt he had done his work, and would do no more original research. He carried on his official duties, however, to the utmost extent that his strength would allow, and devoted much of his time to increasing the teaching scope of his department. As a teacher he was known far and wide. He combined a power of lucid exposition with an accurate and most extensive knowledge of the body, and communicated his enthusiasm to his students. Thompson utilised his knowledge of comparative anatomy and human embryology for purposes of exposition, but in his school such explanations were made subsidiary to the subject of descriptive anatomy, and were not converted into the main theme from which the human structure was suspended as an important appendage. He stood for complete acquaintance with descriptive anatomy as the necessary object of a student's work in the dissecting-room, and was no believer in the system of skimming over details asserted to be "of no practical importance."

Prof. Thompson had a lovable personality, and his death will be felt as a personal shock to many who knew him throughout the country, even though of late years he had rarely appeared in the gatherings of his former colleagues. He married in 1906 a daughter of the late Mr. G. L. Davies of Helsby, Cheshire, and had two sons.

GEORGE SAMPSON ELLISTON, C.B., V.D., M.R.C.S., L.S.A.

COLONEL, T.F. (RETD.)

Colonel G. S. Elliston, son of the late Dr. William Elliston of Ipswich, died at his residence St. Edmund's, Felixstowe, on Nov. 20th in his seventy-eighth year. He qualified M.R.C.S. and L.S.A. in 1866 from Guy's Hospital where he subsequently held house appointments, and later became house surgeon at the Royal Free Hospital and the East Suffolk Hospital, Ipswich. In 1872 Colonel Elliston became a general practitioner in Ipswich; a few years after he was appointed medical officer of health for the borough, and later held other appointments, including those of medical officer at the Isolation Hospital and medical officer of health to the Stamford Rural District. Before his tenure of office as medical officer of health a small-pox epidemic had visited Ipswich, revealing the insanitary condition of certain areas and, incidentally, the fact that there was no provision for dealing with infectious cases. The passing of the Public Health Act of 1875 therefore gave Colonel Elliston an opportunity of putting the town into a better sanitary condition. Old and unhealthy sites were cleared, an isolation hospital was built, and arrangements were made for the provision of a hospital ship. For some 32 years Colonel Elliston continued to work unceasingly in the cause of public health, and on his retirement received the unanimous thanks of the Corporation and the appointment as consulting medical officer for a further period of five years.

Colonel Elliston actively associated himself with the Volunteer movement and with the St. John Ambulance Association. He received his first commission as acting assistant surgeon in the 1st Suffolk Rifles in 1872, subsequently becoming surgeon lieutenant-colonel of the Suffolk Volunteer Infantry Brigade, P.M.O. of the East Anglian Territorial Division, and afterwards administrative medical officer of the East Anglian Division, Royal Army Medical Corps. He became an examiner for the St. John Ambulance Association in 1880 and an Honorary Associate of the Order in 1893, subsequently being made a Knight of Grace. He was made a C.B. in 1911 and retired in 1912, after 40 years service with the Volunteer movement.

Colonel Elliston belonged to a family well known in medical circles. His elder brother was the late Dr. W. A. Elliston, a former President of the British Medical Association and the father of the late Mr. Guy Elliston, for many years secretary of the Association, and of Mr. G. S. Elliston, editor of the *Medical Officer*, while his uncle, Dr. George Green Sampson, was four times mayor of his native city, Ipswich, an unusual civic honour for a medical man. His own father had a large practice in Ipswich, "so Elliston," writes an old friend and colleague, "when he settled down to practise in Ipswich after a term as house surgeon at the East Suffolk, had little need of introduction. But general and family practice had from the first small attraction for him. Medicine in its collective aspect was far stronger in its appeal to him. Ipswich in the 'sixties was mediæval in its insanitation—no general sewerage, no public scavenging, no means of isolating infectious disease, the privy-midden abounding—a fine field for the young sanitarian whose steps were deliberate and whose aim was pursued with conscientiousness. In connexion with another branch of social medicine, Elliston became more widely known. When, in 1878, the St. John Association started the civil ambulance movement, Elliston was a pioneer of it throughout and beyond East Anglia. Organising, training, lecturing, became his hobby. Its usefulness, the traditions of the ancient order, its simple pageantry, strongly appealed to him; a field day without his commanding presence, anywhere in the east and midland districts, seemed

incomplete. At meetings of all kinds his presence was much in demand for his persuasive and genial speech."

The attendance at his burial in Old Felixstowe Church on Nov. 24th was evidence of the large circle of friends among whom Colonel Elliston was held in affectionate regard.

SIR SYDNEY BEAUCHAMP, M.B., B.CH. CAMB.

Sir Sydney Beauchamp, who died in London on Nov. 22nd as the immediate result of an accident, will be deeply regretted by an unusually large circle of friends, as well as by patients and colleagues. He had for many years been in practice in the West End of London, and his skill and devotion to his patients were as marked as the modesty with which he received success and attained to a high place in our professional ranks.

Sydney Beauchamp was born at Bexley, Kent, in 1861, and was educated at Gonville and Caius College, Cambridge, where he graduated in the natural science tripos in 1887. Proceeding to St. Bartholomew's Hospital he took the English double qualification in 1889, and in the following year the Cambridge degrees of M.B., B.Ch. At St. Bartholomew's Hospital he held several minor appointments, among others that of assistant electrician, but it was in general practice, and especially as a skilful obstetrician, that he made his mark. The outbreak of war found him too old for immediate service abroad, but he was made responsible for the organisation of Wrest Park as a military hospital. This was in September, 1914, and he remained its chief medical officer until it was destroyed by fire. It was the admirable work that he did at this hospital, and the devotion which he displayed as physician to the lying-in hospital of the Officers' Families Fund, which brought Beauchamp's name to the notice of the authorities and led to his invitation to accompany the British Delegation to the Peace Conference in Paris as its medical officer. In 1920 his name appeared in the Birthday Honours as having been granted a civil knighthood, a distinction that was thoroughly well deserved.

It is a tragedy that so useful a life should have been cut off in its prime, for although Beauchamp had reached 60 years of age he was an essentially young and energetic man, clear-headed, helpful, and untiring. The expressions of regret at his tragic death which have appeared in the public press represent in his case more than lip-service.

H. E. CORBIN, B.SC. LOND., M.R.C.S., D.P.H.,

MEDICAL OFFICER OF HEALTH, STOCKPORT.

Dr. Herbert Ernest Corbin, M.O.H. Stockport, died at his residence in Stockport on Nov. 24th at the early age of 49. Dr. Corbin took the degree of B.Sc. Lond. in 1897 and qualified M.R.C.S. and L.R.C.P. in 1903, having won from St. Mary's the Senior University Exhibition. After qualifying Dr. Corbin took the D.P.H. in 1905 and held many appointments, including that of medical superintendent of the London Fever Hospital and assistant M.O.H. at Croydon and Willesden. His publications show that his interests were specially directed towards the prevention and treatment of small-pox. He was appointed M.O.H., Borough School M.O., and medical superintendent of the Isolation and Small-pox Hospitals of Stockport in 1908, where he organised the public health department and brought it to a high state of efficiency. Dr. Corbin was joint author (with A. M. Stewart) of a "Handbook of Physics and Chemistry," which reached its fifth edition in 1920. His war record was distinguished. When war broke out he was medical officer of the Manchester Artillery and after mobilisation was appointed special sanitary officer to the 66th East Lancashire division. He then became Major in the R.A.M.C., T., served in Mesopotamia with the rank of Lieut.-Colonel, and during 1917–18 was M.O.H. at Bagdad. Dr. Corbin is survived by a widow and two children.

JOHN SCOTT, M.A., M.D. ABERD.

THE death of Dr. John Scott, formerly of Manchester, took place at Abridge, Essex, on Nov. 22nd. Dr. Scott graduated as M.A. in the University of Aberdeen in 1866, took the degrees of M.B. and C.M. at the same University in 1873, and became M.D. in 1891. He then settled in Manchester in general practice: he was honorary physician to the Manchester Southern Hospital for Diseases of Women and Children—now incorporated in St. Mary's Hospitals—and for several years was lecturer and instructor in vaccination in the University of Manchester. Possessed of wide academic culture Dr. Scott also had literary ability and knowledge of languages, and was thus an expert scientific translator. Some years ago his health began to fail and he retired from his Manchester duties to reside at Abridge with his son, Dr. J. Bethune Scott, at whose house he died at the age of 73.

The Services.

ROYAL NAVAL MEDICAL SERVICES.

Surgn.-Cmdr. H. H. Gill is placed on retired list at own request, with rank of Surgn.-Capt.

Surgn.-Lieuts. L. S. Goss and A. G. Taylor to be Surgn. Lieut.-Cmdrs.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. A. L. Howell retires on retired pay on account of ill-health caused by military service, and is granted the rank of Col.

Capt. F. P. Rankin retires, receiving a gratuity, and is granted the rank of Maj.

Capt. P. A. With is restored to the establishment.

Temp.-Lt. H. C. Perkins to be Temp. Capt.

Temp. Capts. relinquishing their commns., and retaining the rank of Capt.: J. T. Rearden, T. E. Dobbs, E. H. Griffin, J. MacRae, J. G. Castellain, and E. D. Lindow.

ARMY DENTAL CORPS.

Temp. Capt. W. Philp, Dental Surg., from Spec. List, to be Capt.

Acting Capt. G. W. Allen, from Unemplд. List, R.A.F., to be Lt., and to be temp. Capt.

TERRITORIAL ARMY.

Capts. H. R. Moxon and H. F. Humphreys to be Majs.

Majs. A. B. Whitton and J. M. Bowie resign their commns. and retain the rank of Maj., with permission to wear the prescribed uniform.

Capt. A. S. Walker resigns his commn. and retains the rank of Capt.

The following relinquish their commns: Lt.-Col. J. P. S. Ward, with permission to wear the prescribed uniform: Capts. T. L. de Courcy, C. B. Alexander, H. B. Cunningham, and T. J. Costello.

2nd W. Genl. Hosp.—Capt. E. D. Telford, having attained the age limit, is retired, and retains the rank of Capt.

2nd S. Genl. Hosp.—Capt. W. Cotton, having attained the age limit, is retired, and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Lt.-Col. A. M. McIntosh from Genl. List, R.A.M.C., to be Col.

Maj. R. E. Williamson (Lt.-Col. and Hon. Col., Ret., T.F.), having attained the age limit, is retired, and retains his rank, with permission to wear the prescribed uniform.

Capts. D. E. Finlay and J. H. Jordan, from R.A.M.C., Genl. List, to be Majs.

Capt. J. McG. Deuchars resigns his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

Group Capt. (actg. Air Commodore) M. H. G. Fell (Lt.-Col., Bt.-Col., R.A.M.C.), relinquishes his temporary commission on return to army duty.

Group Capt. D. Munro is appointed Director of Medical Services, Air Ministry, vice Group Capt. (actg. Air Commodore) M. H. G. Fell.

Flight-Lt. W. G. L. Wambeek is granted a short service commission in the rank stated, retaining his present seniority.

The undermentioned are granted short service commns. as Flying Officers: E. C. K. H. Foreman, W. J. G. Walker, J. Paxton is granted a temporary commn. as a Flight-Lt.

Medical News.

UNIVERSITY OF OXFORD.—The degree of B.M., B.Ch. has been conferred on D. G. T. K. Cross, St. John's College.—A War Memorial Scholarship of £100 per annum, and confined to intending medical students, is offered for competition at University College on Dec. 6th. Scholarships in natural science, most of which are open to intending medical students, are offered at University, Balliol, Oriel, Lincoln, Magdalen, Christ Church, and St. John's Colleges, examining in combination on Dec. 6th; and at Jesus College on Dec. 17th. *Appointment of Examiners*:—In Organic Chemistry: Edward Hope, M.A., Fellow of Magdalen College; in Human Anatomy: Prof. Arthur Thomson, M.A., Student of Christ Church; in Human Physiology: Martin W. Flack, B.M., M.A., University College; in Materia Medica and Pharmacology: Reginald St. A. Heathcote, D.M., New College; in Pathology: Prof. Henry Roy Dean, D.M., New College; in Forensic Medicine and Public Health: Francis J. Stevens, D.M., Exeter College; in Medicine: Harold Batty Shaw, M.D. Lond.; in Surgery: Sir William Thorburn, M.D. Lond.; in Obstetrics and Gynæcology: George H. A. Comyns Berkeley, M.B. Cantab.

UNIVERSITY OF MANCHESTER.—At a meeting of the Court of Governors of the University of Manchester held on Nov. 16th it was stated that the number of students at present is 2711, of which 575 are new entries. There was a deficit of nearly £18,000, but the University appeal had now reached £231,851, apart from the £15,000 raised by a bazaar. Amongst gifts from towns Oldham had contributed £8355 and Stalybridge £3637. During the last five or six years the total expenditure on new buildings and equipment had been something like £100,000. The rush of students was responsible for involving the University in large and costly extensions, and the expenditure had doubled within the last five years. The Court approved the proposal to appoint as Professor Emeritus, Dr. E. S. Reynolds, professor of clinical medicine in the University from 1913 to 1921.

UNIVERSITY OF LONDON: *Post-graduate lectures on Mental Deficiency.*—A course of lectures supplemented by a course of Clinical Instruction has been arranged by the University Extension Board in coöperation with the Central Association for the Care of the Mentally Defective. The clinical instruction will consist of visits to schools, homes, and certified institutions for the mentally defective, and demonstrations of individual cases of defect by experts to small groups of students. The course will be of two weeks' duration, beginning on Monday, June 12th, 1922. It is intended for qualified medical practitioners and more especially for those who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers, or as medical officers of institutions, or who are otherwise definitely concerned with defectives. The course will be based on the requirements of the syllabus for the University of London Diploma in Psychological Medicine, and the University will grant a certificate of attendance to those who have attended the whole course regularly, taking both theoretical and practical work. Lectures will be delivered at the University of London, South Kensington, by Dr. A. F. Tredgold, Dr. W. C. Sullivan, Dr. E. Prideaux, Dr. F. C. Shrubsall, Mr. Cyril Burt, and Miss Lucy Fildes. Each student will visit one special school and one large certified institution for defectives, and will attend demonstrations by the lecturers and other experts. The registration fee will be £1 1s., and the fee for the course £5 5s. The course will only be held if a sufficient number of students are registered, and intending students are therefore asked to send in their applications as soon as possible to Miss Evelyn Fox, at the University of London, South Kensington, London, S.W. 7, from whom further particulars may be obtained.

The London Inter-Collegiate Scholarships Board announce the following Entrance Scholarships and Exhibitions for 1922:—Twenty-five scholarships and exhibitions of an aggregate total value of about £2920, open to men and women, and tenable in the faculties of arts, science, medical sciences, and engineering of University College, King's College, East London College, and Bedford College, will be offered for competition on May 2nd, 1922. Fifteen medical entrance scholarships and exhibitions of an aggregate total value of about £1300, tenable in the Faculty of Medical Sciences of University College and King's College, and in the Medical Schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on June 27th, 1922. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

EPSOM COLLEGE: ST. ANNE'S HOME SCHOLARSHIP. The Council of Epsom College will shortly award a St. Anne's Home Scholarship of £12 a year to the orphan daughter, between the ages of 7 and 12, of a medical man. Full particulars can be obtained from the secretary, Mr. J. Bernard Lamb, at 19, Bedford-square, London, W.C. 1.

VOLUNTARY HOSPITALS COMMISSION.—Lord Cave, whose report on the voluntary hospitals led to the present scheme for assisting the hospitals, has agreed to serve on the Local Voluntary Hospital Committee for Surrey, as one of the members nominated by the Hospital Commission. Considerable progress has now been made in the establishment of Local Voluntary Hospital Committees in various parts of the country; and during the present week steps are being taken by the Commission to arrange for the preliminary meetings of the local committees for Cornwall, Derbyshire, Glasgow, Monmouthshire, Salop, Staffordshire, Surrey, Warwick, and Worcestershire.

ASSOCIATION OF ECONOMIC BIOLOGISTS.—A general meeting of this association will be held at 2.30 P.M. on Friday, Dec. 9th, in the Botanical Lecture Theatre of the Imperial College of Science, South Kensington, London, S.W. 7. The chair will be occupied by the President, Sir David Prain, and Prof. J. H. Priestley will open a discussion on The Resistance of the Normal and Injured Plant Surface to the Entry of Pathogenic Organisms. The hon. secs. of this association are Mr. Wm. B. Brierley and Mr. S. A. Neave, Rothamsted Experiment Station, Harpenden, Herts.

PRINCE OF WALES'S HOSPITAL AND NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A successful reunion dinner was held at the Trocadero Restaurant on Oct. 27th, with Dr. Arthur Giles in the chair. It was unanimously decided that a reunion association in connexion with the hospital and post-graduate college be formed, and a committee was appointed for this purpose. All inquiries and communications should be addressed to the hon. secretaries, Dr. Jenkins Oliver, 1, Devonshire-place, London, W. 1, and Mr. S. O. Rashbrook, 15, Gordon-street, London, W.C. 1.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.—The annual address will be delivered in the library of the Royal Victoria Infirmary on Friday, Dec. 9th, at 4.15 P.M., by Mr. Herbert Tilley. The subject will be Some Common Diseases of the Ear, Throat, and Nose. The annual dinner will be held the same evening in the Grand Assembly Rooms, Barras Bridge, Newcastle-upon-Tyne, at 7.15. Tickets, at 15s. each, can be obtained from Mr. Norman Hodgson, 14, Jesmond-road, Newcastle.

DONATIONS AND BEQUESTS.—By will the late Sir Frederick Thomas Edridge, J.P., of Bramley Croft, Croydon, Surrey, has left £5000 in trust to pay the income to the Croydon General Hospital while it shall remain an institution of which not less than one-half of the cost of maintenance shall be provided by voluntary contributions: £1500 each to the Surrey Convalescent Home for Men, Seaford, and the Children's Convalescent Home, Bognor: £1000 each to the Croydon General Hospital and the Victorian Convalescent Home for Women, Bognor; and £500 to the Beddington Female Orphan Asylum. These bequests, however, do not take effect during the lifetime of the testator's wife.

ROYAL DENTAL HOSPITAL: ANNUAL DINNER.—The annual dinner of the staff, past and present students of the Royal Dental Hospital of London, which took place at the Hotel Victoria on Nov. 26th, was well attended by all sections of the School, senior and junior. Dr. H. Austen, who presided, while expressing satisfaction with the progress of the Dental School in many directions, lamented the absence of research laboratories and of sufficient accommodation for the treatment of in-patients. Mr. H. Stobie, dean and director of the studies at the School, reviewed the last academic year, with its grand total of 316 students and pupils, and noted an entry this session of 89. The overcrowding in the mechanical department had now passed on into the operating department, where its effects were still felt. The staff had been increased by two extra honorary anæsthetists and by the appointment of Dr. Stanley Colyer as assistant radiologist. He welcomed the institution by London University of a bachelorship in Dental Surgery which was only awaiting its curriculum. The new appointment of medical registrar in the School was giving dental dressers for the first time a comprehensive view of morbid conditions in the mouth. Miss L. B. Aldrich-Blake, dean of the London School of Medicine for Women, responded to the toast of "The Visitors," and the arranged programme, which included excellent glee singing, ended with a felicitous speech from Mr. W. H. Dolamore in proposing the chairman's health.

DENTAL BOARD OF THE UNITED KINGDOM.—The constitution of the Dental Board of the United Kingdom is as follows: Mr. Francis Dyke Acland, M.P. (Chairman); Mr. Laurence George Brock; Mr. Fred Butterfield; Sir Arthur Gerald Chance, F.R.C.S. Irel.; Mr. Dugald McCoig Cowan, M.P.; Mr. William H. Dolamore, M.R.C.S., L.D.S.; Prof. William Henry Gilmour, M.D.S., L.D.S.; Mr. William Guy, F.R.C.S. Edin., L.D.S.; Sir James Hodsdon, F.R.C.S. Edin.; Mr. Horace Archibald Robertshaw; Mr. Edward Leo Sheridan, F.R.C.S. Irel., L.D.S.; Mr. John Sinclair; Mr. Holburt Jacob Waring, F.R.C.S.; and Mr. Norman C. King, Registrar. The offices of the Dental Board will be at No. 44, Hallam-street, Portland-place, London, W. 1. All communications should be sent to the Registrar at that address.

HUNTERIAN SOCIETY.—A meeting will be held on Wednesday, Dec. 7th, at 9 P.M., at Sion College, Embankment, London, E.C. Sir Henry Gauvain will read a paper on "Surgical Tuberculosis," which will be illustrated by lantern slides. All members of the medical profession are cordially invited to attend.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES: SCOTTISH COMMITTEE.—A Conference of representatives of local authorities and others interested in the prosecution of active measures in Scotland for combating venereal diseases will be held in the City Chambers, Glasgow, to-day, Friday, Dec. 2nd. In the morning the Conference will be addressed by Sir Malcolm Morris and Sir Leslie Mackenzie, and in the afternoon by Dr. M'Gregor-Robertson, Dr. A. R. Chalmers, Dr. G. Y. Richardson, and Dr. J. A. Third.

BIRMINGHAM HOSPITAL SATURDAY FUND.—The amount of this year's collection is £58,768, and when a few outstanding contributions have been received it is estimated that the total will be £60,000, or about the same as last year. After providing for the maintenance of the Fund's convalescent homes, surgical aid department, and the interest on the debt on Romsley Hill Sanatorium, there remained a balance of £27,500 to be distributed among the hospitals. This distribution was arranged as follows:—General Hospital £9000, Queen's Hospital £6000, General Dispensary £2250, Children's Hospital £2250, Women's Hospital £1650, Eye Hospital £950, Orthopædic Hospital £600, Skin and Urinary Hospital £650, Jaffray Suburban Hospital £750, District Nursing Society £500. Sums varying from £15 to £450 were distributed to 22 other hospitals and nursing associations.

LITERARY INTELLIGENCE.—Mr. Henry Kimpton announces the forthcoming publication of the following books: X Rays and Radium in the Treatment of Diseases of the Skin, by George Miller MacKee, M.D.; Diseases of the Skin, by Richard L. Sutton, M.D., fourth edition, revised and enlarged; Psycho-Analysis in the Service of Education: being an Introduction to Psycho-Analysis, by Dr. Oskar Pfister, authorised translation; How to Become an Efficient Athlete, by John B. McDougall, M.D., M.R.C.P.—Messrs. J. and A. Churchill announce the forthcoming publication of a new book on Nerve Exhaustion, by Sir Maurice Craig, C.B.E., M.D., F.R.C.P.—Messrs. William Heinemann announce the forthcoming publication of the following books: The Practitioner's Manual of Gynæcology, by Dr. A. C. Magian. History of Electrotherapy, by Dr. Hector A. Colwell. Rickets, by Dr. J. Lawson Dick. Influenza: Essays by several Authors, edited by Dr. F. G. Crookshank. Dosage Tables for Deep Therapy, by Dr. Friedrich Voltz; edited and with a preface by Dr. Reginald Morton.

SUNDERLAND ROYAL INFIRMARY: NEW ORTHOPÆDIC DEPARTMENT.—On Nov. 19th the Richardson pavilion was formally opened at this institution to house the orthopædic department. The paid medical officer in charge has a staff of assistants (male and female) trained and certificated in massage, medical electricity, and remedial, including gymnastic, exercises. He is also in charge of the X ray department. The plan of the one-storied brick building was designed by Mr. W. Robinson, senior honorary surgeon, and the architects, Messrs. W. and F. Milburn. The building includes a waiting room, cloak rooms, an office, a medical officer's consulting and examination room, dressing cubicles, rest room, a large room for massage, electrical treatments, radiant heat and light beds, and accommodation for remedial and gymnastic exercises. There are four bathrooms, one for whirlpool and contrast baths, another for Plombières treatment, a third with long baths, aerated and medicated, and an Aix douche, and a fourth for Vichy and spray baths. There is also a room with arm and leg paraffin wax baths, and a heated linen room. It will be seen that the department is also a completely equipped hydropathic installation. The cost of the building and equipment was nearly £9000.

POUND FOR POUND BASIS OF HOSPITAL ASSISTANCE.—At a meeting of the president and general council of King Edward's Hospital Fund for London, held on Nov. 9th, a resolution was passed protesting against the condition, attached by the Treasury to the temporary assistance voted by Parliament to voluntary hospitals, requiring that fresh money shall be raised pound for pound with the Government grants, on the ground that it will lead to great difficulties, and probably to great injustice. This resolution was forwarded through the Voluntary Hospitals Commission to the Chancellor of the Exchequer, who has replied that the stipulation that the Government grant of £500,000 should be administered on a pound for pound basis is absolutely fundamental, and, furthermore, that the £500,000 grant is the limit of Government assistance to the voluntary hospitals.

THE LATE DR. W. M. HUNTER.—William Munn Hunter, who died at the age of 94, on Nov. 10th, at his home in Eckington, was educated at Paisley Grammar School and at Glasgow University, where he graduated M.D., Ch.B. in the year 1862. After acting as ship surgeon, when he suffered shipwreck off the coast of Newfoundland, he entered upon general practice at Eckington and covered a large area on that side of Sheffield, retiring only a few years ago. Of his 11 children, nine are living.

RYE, WINCHELSEA, AND DISTRICT WAR MEMORIAL COTTAGE HOSPITAL.—Princess Louise, Duchess of Argyll, visited Rye on Nov. 15th and opened this hospital, which has been erected just outside the Rye borough boundary at a cost of about £18,000. The building of the hospital has been made possible mainly through the generosity of Lady McIlwraith, while a total of £25,000 has been collected towards this object. The hospital provides 12 public beds and two private wards, the whole being equipped with all the latest appliances.

SOCIETY OF M.O.H.'S: SCHOOL MEDICAL GROUP.—At a meeting of this Group held in London on Nov. 19th, Dr. J. W. Fraser, of Hull, being in the chair, a resolution was passed as follows: "That the Minister of Health should undertake all the powers and duties now delegated to the Board of Education with respect to medical inspection and treatment of children and young persons as was originally intended and as was the expressed wish of Parliament during the passage of the Ministry of Health Act, 1919." All those present were in favour of bringing such a vital health service into organic relation to other health services, such as infant welfare. It was also resolved, in view of the fact that more than 75 per cent. of absence from school is due (or alleged to be due) to ill-health, to ask the Ministry of Health to encourage the policy of appointing nurses as school attendance officers and more effectively to supervise the health of ailing children. The next Group meeting will be held in Birmingham in January or February.

THE LATE DR. JAMES D. WYNESS.—The death took place at his residence, 1, West Craibstone-street, Aberdeen, on Nov. 24th, of Dr. James Davidson Wyness, one of the best known general practitioners in Aberdeen. Dr. Wyness, who was 76 years of age, was the son of Mr. Alexander W. Wyness of Inverurie, and was born there in 1845. He studied at Aberdeen University, where he graduated M.B., C.M. in 1872 and M.D. in 1874. He commenced practice in Schoolhill, from there he moved to Union-street, and later to West Craibstone-street. He had a very large general practice; his was a striking personality, and his kindliness made him exceedingly popular with all his patients. In 1903 Dr. Wyness acquired the estate of Teuchar and Castlehill, near the village of Cuminestown, some five or six miles from Turriff, and latterly spent several weeks there every year. Dr. Wyness was a widower, and is survived by a daughter, his only child.

TYPHOID AT BOLTON-ON-DEARNE.—The Hemsworth Joint Hospital Board, who have already received 13 typhoid cases from Bolton-on-Dearne (West Riding of Yorkshire), have agreed, upon request from the West Riding County Council, to hold 10 beds in readiness for the reception of any small-pox cases arising during the period of the epidemic in the areas normally served by the various small-pox hospitals temporarily in use for typhoid cases. The latter are the small-pox hospitals of the Kendray Joint Hospital Committee at Lund Wood, of the Doncaster and Mexborough Joint Hospital Board at Conisbrough, and of the Wath, Swinton, and District Joint Hospital Board at Hoober. Dr. J. R. Kaye, county medical officer, believes the epidemic to be subsiding, although primary cases are still appearing. A polluted well in High-street, Bolton-on-Dearne, has been sealed and shut off. Three patients died during the week ending Nov. 19th, bringing the total deaths up to 13; there have been 170 cases reported in this outbreak, distinct from the 52 cases during July and August.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Dec. 7th.

SOCIAL EVENING: A Social Evening will be held on Wednesday. The usual social programme will be provided, but, in addition, Sir Berkeley Moynihan will deliver a short address on "Medicine in Art," with lantern illustrations. The President and Lady Bland-Sutton will receive at 8.30. Fellows are welcome to invite any of their friends, including ladies, and no tickets of admission are required.

MEETINGS OF SECTIONS.

Monday, Dec. 5th.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Discussion: on "Amœbic Dysentery in Great Britain: its Significance and Treatment." To be opened by Dr. Broughton-Alcock. Prof. Warrington Yorke and Dr. P. Manson-Bahr will also speak.
Paper:
Dr. M. Khalil: Thermotropism in Ankylostome Larvæ.

Tuesday, Dec. 6th.

SURGERY: SUB-SECTION OF ORTHOPÆDICS: at 5.30 P.M. (Patients' Casts and Photographs at 5 P.M.)
Discussion:
On "Stabilising Operations in the Treatment of Paralytic Deformities of the Foot," to be opened by Mr. Naughton Dunn (Birmingham).
The President (Mr. Laming Evans), Mr. Bankart, Mr. Aitken, and others will take part in the Discussion.

PATHOLOGY: at the Lister Institute, Chelsea-gardens, S.W.3: at 8.30 P.M.
Dr. V. Korencheusky: Experimental Rickets in Rats, with Demonstration of Specimens. Dr. G. Ségal: The Association of Typhus Virus with the Various Blood Elements. Mr. A. W. Bacot: Demonstration of Rectal Infection of Lice by Weigl's Method. Mr. A. W. Bacot and Dr. G. Ségal: The Development of Rickettsia in Lice, following Intrarectal Infection with Typhus Virus. Dr. R. St. John Brooks and Dr. M. Rhodes: Some Observations on the Hæmorrhagic Septicæmia Group. Miss E. H. Lepper: Gall-bladder Infections following the Intravenous Inoculation of Coliform Organisms in Rabbits. Dr. S. P. Bedson: Demonstration of Histological Material from Experimental Purpura. Dr. S. Kanai: Dysentery Immunisation per os.

Wednesday, Dec. 7th.

SURGERY: at 5.30 P.M.
Papers:
Sir Charles Ballance: Ligation of the Innominate Artery.
Sir Lenthal Cheatle: A New Operation for Inguinal Hernia.

Thursday, Dec. 8th.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.
Paper:
Dr. A. G. S. Mahomed: The Relation of Atmospheric Electrical Variations to the Incidence of Epileptic Fits.
Discussion on the Organisation of the Section.

NEUROLOGY: Clinical Meeting at the Hospital for Paralysis, Maida Vale, at 8 P.M.

Friday, Dec. 9th.

CLINICAL: at 5.30 P.M. (Cases will be shown at 5 P.M.)

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Informal Meeting: Tea, Talk and Tobacco.
Dr. Carelli, of Buenos Aires, will give a Demonstration of his "Method of Radioscopic Examination with the Help of Gas Injections." Dr. Riddell will also give a Demonstration of a "Simple Apparatus for Making Serial Radiographs of the Pyloric Region in the Horizontal and Upright Positions."

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Clinical Evening.

HUNTERIAN SOCIETY, Sion College, Victoria Embankment, E.C. 1.
WEDNESDAY, Dec. 7th.—9 P.M., Sir Henry J. Gauvain: Surgical Tuberculosis (illustrated by lantern slides).

HARVEIAN SOCIETY OF LONDON, Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Dec. 8th.—8.30 P.M., *Discussion:* Is the Anginal Syndrome only of Cardiac Origin? Opened by Sir John Charlton Briscoe, followed by Sir Sydney Russell-Wells, Dr. G. H. Hunt, and Sir William Willcox.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.
MONDAY, Dec. 5th.—General Meeting at 122, Harley-street, at 4 P.M., A Discussion on The Place of the Colony in the Tuberculosis Scheme, will be opened by Dr. S. Tinker, and a Discussion on The Place of the Sanatorium at Present and in the Future, will be opened by Dr. Noel Bardswell.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Dec. 5th.—5 P.M., Dr. Arthur Saunders: Digestive Disorders of Old Age; Carcinoma of the Stomach.
TUESDAY.—5 P.M., Mr. Addison: Intravenous Therapy.
WEDNESDAY.—5 P.M., Mr. Page: Anæsthesia.
THURSDAY.—5 P.M., Mr. Bishop Harman: Congenital Cataract.
FRIDAY.—5 P.M., Dr. Pritchard: Blood Pressures.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Dec. 5th.—5.30 P.M., Lecture: Dr. Parsons-Smith: Infective Endocarditis.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Dec. 8th.—4 P.M., Lecture: Mr. H. A. T. Fairbank: Coxa Vara.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Dec. 6th.—4.30 P.M., Dr. F. E. Tylecote: The After-treatment of Pneumonia.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Whitworth-street West Branch, Manchester.
FRIDAY, Dec. 9th.—4.30 P.M., Dr. Fletcher Shaw: Antepartum Hæmorrhage.

ANCOATS HOSPITAL.
THURSDAY, Dec. 8th.—4.30 P.M., Mr. Harry Platt: The Diagnosis and Treatment of the Common Affections of the Hip-joint.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
WEDNESDAY, Dec. 7th.—4 P.M., Lecture VIII.:—Sir Kenneth Goadby: Lead Poisoning in Industry.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE.
Post-Graduate Lectures and Demonstrations.
TUESDAY, Dec. 6th. (At the Royal Hospital.)—3.30 P.M., Prof. Douglas: Vaccines. 4.15 P.M., Mr. V. Townrow: Demonstration of Cases.
FRIDAY. (At the Royal Hospital).—3.30 P.M., Dr. G. Wilkinson: Diagnosis of Diseases of the Accessory Sinuses of the Nose. 4.15 P.M., Dr. G. Wilson: Orthopædics.

CHADWICK PUBLIC LECTURES, Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.
THURSDAY, Dec. 8th.—8 P.M., Dr. Charles Singer: History of the Doctrine of Infection.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Dec. 8th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Eczema.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 5th.—4.30 P.M., Dr. J. Bright Bannister: Some Obstetric Emergencies.
TUESDAY.—3.30 P.M., Dr. F. G. Crookshank: Physical Examination of the Chest (3)—The X Rays.
FRIDAY.—4.30 P.M., Dr. C. E. Sundell: The Clinical Diagnosis of Tuberculosis in Children.
Daily:—2.30 P.M., In-patient, Out-patient Clinics, Operations, &c.

Appointments

McDONALD, N., M.B., Ch.B. Vict., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Hon. Anæsthetist, Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.

THOMSON, E. G., M.D., B.Ch. Aberd., to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for the Sheriffdom of Forfar.

Certifying Surgeons under the Factory and Workshop Acts: SKEGGS, B. L., M.R.C.S., L.R.C.P. Lond. (Stevenage); STRACHAN, A., M.B., Ch.B. Edin. (Finedon).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road.—Res. H.S. £160.

Bedford County Hospital.—Asst. H.S. £150.

Birmingham, City Hospital for Infectious Diseases.—Temp. Asst. M.O. £350.

Birmingham Ear and Throat Hospital.—H.S. £200.

Birmingham General Dispensary.—Res. M.O. £500.

Birmingham, Queen's Hospital.—Obst. and Ophth. H.S. Each £90.

Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £415.

Bristol General Hospital.—Hon. M.O. Hon. Med. Reg. Hon. Clin. Assts.

Bristol Royal Hospital for Sick Children, &c.—H.P. £150.

Burnley, Victoria Hospital.—H.S. £200.

Bury Infirmary.—Jun. H.S. £150.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.
Cambridge, Addenbrooke's Hospital.—H.P. £130.
Cape Town University.—Technical Asst. in Surgery. £350.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O.
Coventry and Warwickshire Hospital.—Res. Jun. H.S. £200.
Croydon General Hospital.—Hon. Jun. P.
Finsbury Dispensary, Brewer-street, E.C.—P. £50.
Great Northern Central Hospital, Holloway.—Two P.'s.
Grimsby and District Hospital.—Res. H. S. £300.
Harefield, Middlesex County Sanatorium.—Sen. Asst. Res. M.O. £450.
Hospital for Consumption and Diseases of Chest, Brompton.—Anæsth. £100.
Inverness Northern Infirmary.—H.S. £150.
Ipswich, East Suffolk and Ipswich Hospital.—Res. M.O. £350.
Iraq.—Two M.O.'s. 600 to 1000 rupees per mensem.
Lambeth Parish Infirmary.—Jun. Asst. M.O. £300.
Leicester Royal Infirmary.—Two H.S.'s. £200.
London Temperance Hospital, Hampstead-road.—Res. Cas. O. £150.
Loughborough and District General Hospital, &c.—Res. H.S. £200.
Macclesfield General Infirmary.—Sen. H.S. £180.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester City.—M.O. £450.
National Dental Hospital, Great Portland-street.—Hon. Anæsth.
National Hospital for Paralysed &c., Queen-square.—Asst. P.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Northampton, County of.—Tuberc. O. £700.
Nottingham City Asylum.—Sec. Asst. M.O. £400.
Nottingham General Hospital.—H.S. £200.
Oldham Royal Infirmary.—Three H.S.'s. Each £200.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. and Sen. Obstet. Asst. £50.
Royal National Orthopædic Hospital, Great Portland-street.—H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
Sheffield Royal Infirmary.—Cas. O. £150.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland Royal Infirmary.—Path. and Bact. £300.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Walsall Education Committee.—School Med. Insp. £500.
Warrington, Lancashire County Asylum, Winwick.—Asst. M.O. £300.
Western Ophthalmic Hospital, Marylebone-road.—Two Hon. Asst. Surgs.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 4 (Lancaster County Courts). Applications should reach the Private Secretary, Home Office, not later than Dec. 11th

Births, Marriages, and Deaths.

BIRTHS.

PLOWMAN.—On Nov. 23rd, at "Pencarrow," Enfield, the wife of Rupert R. Plowman, of Calcutta, of a daughter.

PYWELL.—On Nov. 23rd, at Paget House, S.W., the wife of Dr. Percy Dodd Pywell, of a daughter.

ROSS.—On Nov. 27th, at Worcester House, Sutton, Surrey, the wife of J. N. MacBean Ross, M.C., M.D., F.R.C.S., of a son.

SCOTT.—On Oct. 13th, 1921, at 8 R.A. Lines, Meerut, India, the wife of Major T. H. Scott, D.S.O., M.C., R.A.M.C., of a son.

WILSON.—On Nov. 27th, at Harley-street, W., the wife of Dr. S. A. Kinnier Wilson, of a son.

MARRIAGES.

FORWARD—MIDDLEMISS.—On Nov. 22nd, at St. Cuthbert's, Earl's Court, Dr. Ernest Lionel Forward, M.R.C.S. Eng., L.R.C.P. Lond., to Aileen Frances, only daughter of C. S. Middlemiss, C.I.E., F.R.S., Srinagar, Kashmir, India, and Mrs. Middlemiss, Crowborough.

RUSSELL—MCKEAN.—On Nov. 9th, at Colombo, Captain Wm. Russell, M.C., R.A.M.C., to Marjorie Doris Clive, younger daughter of George A. V. and Mrs. McKean (formerly of Manchester and Newcastle-on-Tyne).

DEATHS.

CORBIN.—On Nov. 24th, at his residence, Trevenen, Beech-road, Stockport, Herbert Ernest Corbin, B.Sc. Lond., D.P.H., Medical Officer of Health of the County Borough of Stockport, aged 49 years.

ELLISTON.—On Nov. 20th, at St. Edmund's, Felixstowe, Colonel George Sampson Elliston, C.B., V.D., M.R.C.S., Knight of Grace of the Order of St. John of Jerusalem, in his 78th year.

LITCHFIELD.—On Nov. 24th, at 61, Arragon-road, Twickenham, Henry Robert Campbell Litchfield, L.R.C.P. Lond., M.R.C.S. Eng.

VENIS.—At Karachi, India, on Oct. 18th, 1921, after a long illness, Sadie Geneviève, the dearly-loved wife of H. Carey Venis, B.A., L.R.C.P., L.R.C.S., D.P.H., Medical Officer of Health, Port of Karachi.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

EGYPT AND THE SOUDAN: HEALTH AND SANITATION.

I.—EGYPT.

A REPORT by Field-Marshal Lord Allenby, His Majesty's High Commissioner, on the affairs of Egypt and the Soudan for the year 1920, includes several references to medical and sanitary matters. The following is a summary of some of the principal points:—

Owing to the fact that the conditions of Government service generally in the various Ministries are at present under investigation by the "Cadre Commission," no material progress has been made in the reorganisation of the health services of the country on the lines recommended by the Government Commission which was appointed in 1918 to advise on this subject. The creation of a post of Under-Secretary of State for Health in June of last year has been of some advantage to the administration in so far as it has placed the head of the service in the position of being able to act with greater effect in all matters affecting the health interests of the country, but the directorate is still needlessly overloaded with many matters of trivial detail which will be difficult to get rid of until the four main branches of the administration are put in the position of autonomous services dealing directly with other Government administrations as regards their own work, whilst the functions of the controlling authority in its relation to them are largely confined merely to such intervention as is necessary for the coördination of their efforts. With the creation of the new post of Under-Secretary of State there occurred certain changes in the positions of the higher personnel. The director-general became Under-Secretary of State, the deputy director-general was made director-general, whilst the post of deputy director-general was suppressed and a new post of inspector-general was created, to which was appointed one of the senior Egyptian divisional inspectors, Dr. Ahmed Bey Tewfik. The dissatisfaction with the conditions of service in the public health administration continues, but the difficulties of recruiting for the service were somewhat eased during 1920 by the hope that some improvement might result from the findings of the Cadre Commission.

Special Legislation.

During the past year two questions urgently called for fresh legislation. The requirements of the first of these were met by the introduction of a new law giving greater powers of dealing with unqualified dental practice, which had gradually become a serious public danger. The penalties under the old law afforded an insufficient deterrent to a gradually increasing number of ignorant persons who found in the practice of dentistry a lucrative source of gain, and in February the new law was promulgated. In order to draw some distinction in favour of those unqualified practitioners, who by long practice had acquired some empirical knowledge of the art, provision was made for the grant of a modified form of permit to those who had been in continuous practice as dentists for ten years or more and who could pass a special examination. Of 218 candidates admitted to the technical examination 193 satisfied the examiners. The second question which called for special legislation was first brought to notice in the summer of 1919 when it was reported to the department that a soldier of the British Army had contracted anthrax by using an infected shaving brush, which was found to be one of a consignment recently imported from Japan. On May 29th a law was promulgated forbidding the admission of any shaving brushes into the country unless accompanied by certificates of disinfection from the competent authority in the country of manufacture. With the cessation of hostilities and the greater facility for obtaining labour, the work of filling in or draining those ponds of stagnant water and marshes which constituted a danger to public health was again actively taken up and has progressed considerably. Twenty-nine Government-owned birkas were filled in, with an aggregate area of 75,179 square metres.

Prostitution.—Medico-Legal Examinations.

The number of prostitutes registered in Egypt was 5836. 173,931 examinations were made, in the course of which 1085 women were found suffering from syphilis, 4306 from gonorrhœa, and 959 from other diseases. During the year 7860 prostitutes actually received treatment in Government hospitals, 1425 of these being for syphilis, 5729 for gonorrhœa, and 719 for other diseases.

During 1920 60,405 examinations of injured persons were carried out by the medical officers of the Public Health Department. Of these, 12,554 were accidental injuries.

whilst 47,851 were criminally inflicted. Death occurred as a result of injuries in 5617 of the cases examined, of which 1640 were cases of criminally-inflicted injuries.

Hospital Accommodation.

It is recorded with satisfaction, as a proof of increasing public interest in the provision of hospital treatment for the poor, that during the year several notables have interested themselves in collecting funds and have personally given very generous donations of money and land for the building and upkeep of new hospitals. The existing ones are most inadequate in number and size for the population. The Government have accepted from Messrs. Thomas Cook and Son the liberal gift of the freehold building and equipment of their hospital at Luxor, and it is hoped that this institution will shortly be reopened. A sum of £E.500 has been privately subscribed to supply Kena Hospital with an electric plant for lighting and X ray work.

During the war the military accommodation provided for the sick and wounded from the forces in Egypt, Palestine, and Gallipoli had to be supplemented by the use of the Egyptian Government hospitals under the public health administration for the reception of a portion of these, and 44,636 sick and wounded were actually treated in these hospitals during the years 1914–19. With the cessation of hostilities the necessity for this has gradually diminished, so that last year provision had to be made for only 407 military cases. There has consequently been a reduction in the general number of in-patients from 64,704 in 1919 to 62,493 in 1920. On the other hand, the number of out-patients has increased from 219,573 in 1919 to 274,557 in 1920, the number of attendances having been 578,789, or roughly two per patient. The number of major operations performed increased from 9051 to 12,797. Special anthelmintic annexes similar to that attached to Kasr-el-Aini Hospital at the end of 1919 were established in connexion with the Qaliub, Benha, and Mansura general hospitals for the free treatment of out-patients suffering from ankylostoma, bilharzia, and other worm infections. This is intended to form part of a general campaign against ankylostoma and bilharzia in Egypt. The number of out-patients treated since the opening of these annexes is 14,905. Of these, 1905 were infected with ankylostoma and 13,000 with bilharzia. The seven schools for training native midwives in provincial towns continued to do good work and remained open throughout the year. These centres are becoming increasingly popular both with the general public and with the medical profession. The 13 children's dispensaries worked continuously through the year, except that at Assiut, which was closed on the ground of lack of funds. Though simple remedies are prescribed for the sick children attending the dispensaries, these institutions are also infant welfare centres, where the mothers receive instruction in the care of their children, in simple hygiene, correct methods of feeding, suitable clothing, &c., and above all the matrons try to inculcate habits of cleanliness. This is a difficult matter under the primitive housing conditions which prevail, with the total lack of water-supply or of any lavatory accommodation, but some progress is evidenced by the cleaner faces and clothing of the children attending the dispensaries. The total number of attendances in 1920 was 391,703 and the number of children receiving treatment was 56,462.

Since 1903, when Sir Ernest Cassel made his gift of £E.40,000 for the purpose of providing centres of ophthalmic treatment, the scope of this branch of the medical service has gradually increased until at present there are 20 hospitals provided for the purpose of affording treatment to sufferers from eye disease. Of these, 5 are travelling hospitals, which are moved as required from place to place, and 15 are permanent. The number of patients treated in 1920 was 94,921, of whom 4232 were actually admitted into hospital. A special ophthalmic hospital is urgently required in Cairo. It is now impossible to cope with the vast number of patients who come demanding operations to relieve in-growing eyelids and eyelashes—one of the cicatricial results of trachoma—whilst there is also insufficient ophthalmic relief in Cairo for the thousands who suffer, especially during the hotter months of the year, from painful and destructive diseases of the eye. There is therefore a pressing necessity for a centrally situated hospital equipped with 100 beds and able to treat 2000 out-patients daily in the summer.

Infectious Diseases.

The incidence of infectious disease during 1920 was exceptionally low. There was a reduction of 60 per cent. in small-pox, 48 per cent. in plague, 22 per cent. in typhus, and 12 per cent. in relapsing fever. One case of cholera occurred at Suez in the summer. There was a slight rise in the number of cases of malaria, probably in large measure the result of the fuller notification of cases. During the year 34,173 passengers and immigrants from countries infected with cholera landed in Egypt. Measures of control and observation at their destinations were applied to 33,578 of these, and no cholera infection showed itself. Land passengers from Palestine were similarly controlled for all diseases. Difficulties of ordinary transport obliged the Government to charter a steamer for the transport of the Egyptians making the pilgrimage to Mecca, the number being 1658 in addition to the Mahmal escort and staff of 507. Before their departure all pilgrims were vaccinated against cholera. No regular visit was made to Medina, but in view of the possibility of pilgrims paying clandestine visits to that place and escaping observation by returning over the Medina railway, on which there are no regular quarantine arrangements, a system of patrols was instituted in the Sinai Peninsula for the purpose of intercepting any pilgrims who might enter Egypt directly from Arabia or through Palestine. Fifteen such pilgrims were intercepted by these patrols and put under observation. No cholera was reported from the Hedjaz and none occurred amongst the returning pilgrims.

Laboratory Examinations.

The total number of examinations carried out in the laboratories during the year was 18,411, as compared with 15,050 in 1919, showing, as before, a steady increase. 10,098,720 doses of vaccine lymph were prepared in the Vaccine Institute in 1920 as compared with 5,645,020 in 1919, this considerable increase being due to the fact that the Epidemic Service of the Public Health Department undertook a large campaign of general revaccination with the object of stamping out or reducing the continual occurrence of small-pox in Egypt. In 1920 1228 persons were treated in the Antirabic Institute. Most of these had been bitten by dogs, but cases of bites by such diverse animals as cats, wolves, monkeys, donkeys, horses, mules, camels, jackals, and rats were also treated. Two persons bitten by a rabid human being likewise received treatment.

During the last 12 months the Anti-Malaria Commission has spent considerable sums of money in filling in breeding-places of mosquitoes or draining them, and in the case of large bodies, stocking them with larvæ-eating fish. Special work has been carried out in the oasis of Siwa and Kharga, where malaria of a severe type was rampant. Careful spleen examination work has been carried out by the Public Health Department, and as a result it is proposed now to deal with a number of sites (especially in the Fayum) where such efforts appear most necessary. The Commission is satisfied that there is no immediate danger of the rapid increase of malarial infection in Egypt, but at the same time is of opinion that a careful watch should be kept on this disease, and that steady continuous work should be done to get rid of all possible sources of infection.

(*To be concluded.*)

INFECTIOUS DISEASE ON ACTIVE SERVICE: THE AMERICAN EXPEDITIONARY FORCE.

In the *Military Surgeon* for October Dr. Haven Emerson of New York gives account of the communicable diseases which occurred in the American Expeditionary Force in France from July, 1917, to May, 1919. Diphtheria (4714 cases, 62 deaths, case mortality 1·3 per cent.) was brought over to France early by the 32nd and 35th Divisions, but later contracted by infection from the French civil population, more numerous in the less devastated American zone. At Mesves wound diphtheria occurred; it did not cause the usual toxæmia, and was not controlled by the injection of anti-diphtheritic serum. In the British Army, it may be remarked in passing, the infected wounds were dressed with anti-diphtheritic serum. Mumps (82,000 cases, 43 deaths, case mortality 0·05 per cent.) was, as ever, an important disease in an army of young men, for it meant 1500 hospital beds constantly occupied, and 4500 at one time in December, 1918. Measles (8207 cases, 86 deaths, 1·05 per cent. case mortality) became insignificant after new troops ceased to arrive. Its extreme contagiousness was a challenge to employ every precaution; daily or twice daily inspections, segregation, enforced hygiene were the principal safeguards. Cerebro-spinal fever (1965 cases, 911 deaths, case mortality 44 per cent.) appeared mostly at the bases, being contracted in crowded transports where each man had only 9 square feet of area. It was most frequent in October, 1918, with influenza prevalent and the coöperation of cold, wet weather, overcrowding and exhaustion. Scarlet fever (2064 cases, 70 deaths, case mortality 3·39 per cent.) occurred mostly at the beginning of the campaign; it was communicated in the transports and was easily controlled. The diagnosis of cases of dysentery does not seem to have been so vigorously determined by the laboratory as in the French and English armies. It is noted that there were 150,000 cases of diarrhœa in the 1st Army in July, 1918. Such a strain on the administrative machinery must have determined to some extent the fortunes of that month.

EUGENICS IN SWEDEN.

IN May last the Swedish Riksdag decided by an overwhelming majority to provide funds for the foundation of an institute for the study of eugenics. It is claimed that this is the first instance of a national governing body giving tangible proof of its conviction that the science of eugenics has at least a putative practical value, and that the State must help as well as exploit the researches of race-hygienists. The appointment of Prof. Herman Lundborg as Director of this State Institute for the study of race-biology augurs well for the future. Important papers which he has already published on hereditary factors in tuberculosis are a guarantee that essential questions will not be neglected at the institute under his control.

A MEDICAL ART CALENDAR.

THE fourth annual issue is announced of the well-known illustrated Medical Art Calendar issued by Mr. J. Philip Kruseman at The Hague, with text in English and Dutch. The present calendar delineates the alchemist, the barber-surgeon, and the dentist in their workshops rather than the family physician, and may be regarded as caricature more than portraiture. But the numerous artists of the Dutch school whose works are reproduced give evidence of their customary insight into character, and the collection has considerable archæological interest. The ways and manners of some of the characters portrayed are still to be observed among the unqualified or unregistered practitioners of the healing art. The price of the calendar is 6*s.* post free.

DREAM FAIRIES.

Dr. T. Wilson Parry, whose modest excursions into verse belie the popular idea that doctor and materialist are synonymous terms, has, in his book entitled Dream Fairies (London: Simpkin, Marshall, Hamilton, Kent and Co., 1921, pp. 34, 2*s.* 6*d.*), some pretty conceits about flowers and fairies. His nine themes and the dedication—

> To every child whose spirit wild
> Hears beckonings from the brook—

are illustrated by a series of ten designs from the pencil of Mr. Gerald Aylmer, whose imagination and dexterous pen have caught the message of the verses while displaying a keen appreciation of floral beauty. One of the pieces, "The Prescription," has already appeared in *St. George's Hospital Gazette*, and a quotation from it will show the spirit in which Dr. Parry writes:—

> ℞ A nettle-sting,
> Lustre from a lace-fly wing,
> Glitter from a night owl's eye,
> Wing-down from a butterfly,
> Sheen from a grasshopper's skin,
> Flashings from a troutlet's fin,
> Glimmer from a glow-worm's light,
> Glint from a kingfisher's flight,
> Add the blush of one wild rose,
> Several dew-drops interpose,
> Pound them in an acorn-cup,
> Then, dear fairy, drink it up.

The thin quarto is in a dainty cover and the print is bold. It would make a welcome present for a child at Christmastide and it should equally appeal to many grown-ups.

A COMBINED BIRTH CONTROL AND WELFARE CENTRE.

THE centre, which began its career at 153a, East-street, Walworth, London, S.E. 17, on Nov. 9th, was open to members of the press on Nov. 24th. The centre is being conducted under the auspices of the Malthusian League, its object being to give definite instruction in regard to birth control, as well as the advice usually given at infant welfare centres. There is a nurse in attendance daily, but enquirers about birth control are directed to attend the doctor's special weekly consultation. It is not taken for granted that those attending wish for information about birth control unless they ask for it, but such information would apparently be given as willingly to a young, newly-married woman as to one who already had a large family, though some preliminary inquiries are always insisted upon. There does not seem to be any promise required that the instruction will not be handed on to others. The centre is still in its infancy, but later on visits will be paid to the homes in order that the conditions in individual cases may be ascertained. Structurally the premises appear adequate. On the ground floor there is an unfurnished room in which prams may be left, also a secretary's room and a doctor's consulting room; upstairs, the waiting room, stretching the full length of the house, has been made attractive with good picture posters and brightly-coloured washing cushion seats. The centre is not connected with any municipal or local authority, but is run entirely as a voluntary concern, advertised by means of open-air lectures in South London, and by the distribution of educational leaflets and forms of application.

VENEREAL DISEASE IN AUSTRALIA.

AN association is to be formed for the prevention of venereal disease in Victoria. It will consist of laymen and medical practitioners, and its activities will be mainly educative, Sir James Barrett being the moving spirit in the new organisation. A somewhat similar body already exists in New South Wales. In Western Australia the Government proposes to abolish the compulsory notification provisions of the existing Venereal Disease Act in that State. The general experience of notification in those Australian States which have special venereal disease legislation has been disappointing; it is quite certain comparatively few females are notified. Compulsory treatment does not appear very satisfactory, and there is great divergence of opinion as to the value of certification of cure.

THE SCHOOL CHILD'S ENVIRONMENT.

SOME indication of the effect of environment upon the physical condition of children of school age arises from comparative examinations at the Allcock-street and Bournville elementary schools made by Dr. J. B. Lowe, assistant school medical officer of Birmingham. The former is an old building, situated in one of the most congested areas of Birmingham, a district full of back-to-back and tenement houses; while the latter is a modern building in an industrial suburb. The allowance of cubic and floor space per boy is, however, the same, and it is stated that there are no marked differences in the ventilation, heating, or sanitary conditions of the two schools. The examination consisted of an ordinary medical inspection and the recording of physical measurements. The differences shown were as follows: Allcock-street (out of 118 scholars): Above normal, 6 per cent.; below normal, 41·5 per cent. Bournville (out of 106 scholars): Above normal, 17 per cent.; below normal, 19 per cent.

AN INSTITUTE OF APPLIED PESTOLOGY.

AT the London Pavilion, Shaftesbury-avenue, on Nov. 24th a meeting was held with the object of inaugurating an Institute of Applied Pestology. Dr. Nathan Raw, M.P., presided, and those present included Lord Aberconway and representatives of the medical and other scientific professions. Mr. Alfred E. Moore, of the Inc. Vermin Repression Society, delivered a short address in which he pointed out that the new Institute sought to coördinate efforts in the extermination of all pests, not rats alone. The effects of the Rats and Mice Act, recently passed, were nullified by allowing rubbish dumps to form suitable breeding grounds for myriads of mice. Men in universities and hospitals were spending their lives in seeking to find remedies for pest-borne disease at a remuneration often not greater than a dustman's wage. The Institute would endeavour to remedy this state of things and to assist manufacturers in exterminating the pests which ravaged their stocks and raw material. By articles in the press, by the exhibition of films, and in other ways, it was hoped to educate the public. An executive committee was then constituted with Mr. Moore as chairman; Mr. J. E. Pryde-Hughes and Mr. J. L. Hayden, joint hon. secretaries; Prof. F. Hobday, F.R.C.V.S., and Col. S. J. M. Auld, D.Sc., were among those nominated as vice-presidents. The subscription was fixed at 1 guinea for Fellows, 5 guineas for Members, and half a guinea for Associates. The meeting closed with an exhibition of films showing how rats enter and leave ships, warehouses, and wharves, how they destroy live stock, materials, and property and defile food, and the methods for destruction of rats recommended by the Ministry of Agriculture and the Vermin Repression Society. The address of the Institute is 168, Fleet-street, London, E.C.

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